PURPLE REIGN:

Ascent and Decline of Joint Behavior in the U.S. Military

by

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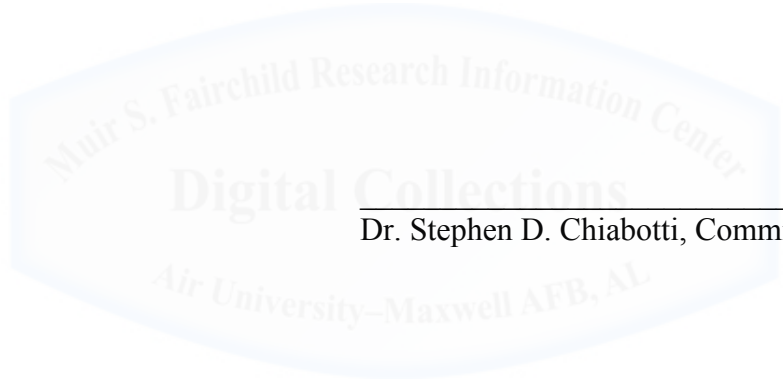| 4. TITLE AND SUBTITLE **Purple Reign: Ascent and Decline of Joint Behavior in the U.S. Military**	5a. CONTRACT NUMBER
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14. ABSTRACT
The U.S. military sends mixed messages about the degree to which it embraces and practices jointness. Official publications tend to reflect a high degree of inter-service cooperation and interdependence, though history and practical experience reveal frequent bouts of dysfunction and willful independence. There also seems to be disagreement about what constitutes the essence of jointness. Various experts argue that combined-arms success lies in the proper arrangement of forces under a commander with sweeping authority, which reduces squabbles about doctrine and command-and-control issues that periodically plague large operations. Others characterize jointness as the possession of compatible military hardware or the procurement of common equipment. The former allows interdependence on the battlefield; the latter can strengthen national defense by furthering both combined action and fiscal efficiency.

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The fear of the LORD is the beginning of knowledge.
Proverbs 1:7a

ABSTRACT

The U.S. military sends mixed messages about the degree to which it embraces and practices 'jointness.' Official publications tend to reflect a high degree of inter-service cooperation and interdependence, though history and practical experience reveal frequent bouts of dysfunction and willful independence. There also seems to be disagreement about what constitutes the essence of 'jointness.' Various experts argue that combined-arms success lies in the proper arrangement of forces under a commander with sweeping authority, which reduces squabbles about doctrine and command-and-control issues that periodically plague large operations. Others characterize jointness as the possession of compatible military hardware or the procurement of common equipment. The former allows interdependence on the battlefield; the latter can strengthen national defense by furthering both combined action and fiscal efficiency.

This dissertation seeks to identify the conditions that accompany effective inter-service cooperation within the U.S. military. With a backdrop of several established general academic theories and military-specific social science applications, the work examines three historical case studies of cooperative military ventures. The particular examples offered for analysis are the AirLand Battle doctrine and operational concepts developed by the Army and Air Force in the 1980s, the acquisition by the Air Force and Navy of the Joint Primary Aviation Training System starting in the 1990s, and aspects of the close air support and airborne reconnaissance dedicated to the conflicts in Afghanistan and Iraq that began, respectively, in 2001 and 2003.

Relying on case-study observations, this work distills existing scholarship into a pre-theoretical framework for analyzing the phenomenon called 'jointness' and attempts to reduce the ambiguity of the term's current usage. The intent is to provide practitioners with a robust set of parameters that characterize military cooperation. With further case-study analysis, this preliminary framework may prove useful for making predictions about the viability of joint military ventures or offer figures in the defense establishment some techniques for encouraging more wide-ranging inter-service cooperation.

Drawing initial conclusions from the case studies examined, this work has determined that 'jointness' is by no means the default state of the U.S. military. Since various actors use the term in a variety of ways, it is impossible to provide a precise definition that remains useful. It is helpful, however, to acknowledge that both competition and a plurality of ideas inhere in pursuing jointness, and to neither suppress nor deny this reality. Successful cooperation takes a significant amount of effort to overcome normal bureaucratic forces, and constructive conflict is a part of this creative process. When they ascend to any type of useful outcome, joint endeavors reflect the energy put into them by invested leaders. The semantic flexibility of the term 'jointness' affords a great deal of latitude to anyone who wishes to pursue such efforts.

Among joint initiatives that demonstrate utility, observers may expect to see half-lives of disappointing duration—an inevitable decline of the hard work that is joint cooperation. External influences—either in the form of international conflict or the direct involvement of high-echelon government figures—along with exceptional, joint-minded military leaders seem to be the most obvious prerequisites for inter-service cooperation. Even these factors are not enough, however. Advocates must identify and articulate a set of interests that cause competing factions to coalesce around a common cause. As long as their message resonates across the levels of the larger defense establishment, initiatives can survive and, sometimes, even thrive.

ACRONYMS AND ABBREVIATIONS

AAC	Army Air Corps		BFT	Blue-Force Tracker
AAF	Army Air Force		BRAC	Defense Base Closure and Realignment Commission
ACC	Air Combat Command			
ACCE	air component coordination element		CALL	Center for Army Lessons Learned
ACTS	Air Corps Tactical School		CAOC	combined aerospace operations center
AEF	air and space expeditionary force		CAP	combat air patrol
AETC	Air Education and Training Command		CAS	close air support
			CENTCOM	U.S. Central Command
AFB	Air Force Base		CFACC	coalition force air component commander
AFOTEC	Air Force Operational Test and Evaluation Center			
AFPATS	Air Force Primary Aviation Training System		C-IED	counter-improvised explosive device
AFSOC	Air Force Special Operations Command		CJCS	Chairman of the Joint Chiefs of Staff
AGM	air-ground missile		CNATRA	Chief of Naval Air Training
AGOS	Air-Ground Operations School		COIN	counter-insurgency
			COTS	commercial-off-the-shelf
AIDS	acquired immunodeficiency syndrome		CRC	command and reporting center
ALB	AirLand Battle		CSBA	Center for Strategic and Budgetary Assessments
ALFA	Air-Land Forces Application Agency		CT	counter-terrorism
			CTS	combat training squadron
ALO	air liaison officer		DARPA	Defense Advanced Research Projects Agency
ALSA	Air-Land-Sea Application Agency		DCA	defensive counter-air
AM	amplitude modulation		DCSOPS	Deputy Chief of Staff for Operations
AO	area of operations			
AOR	area of responsibility		DGS	distributed ground system
ASOC	air and space operations center		DoD	Department of Defense
			DO	operations directorate
ASOG	air support operations group		EBO	effects-based operations
ASOS	air support operations squadron		EFS	enhanced flight screening
			ELINT	electronic intelligence
ATC	Air Training Command		ETAC	enlisted terminal air controller
ATM	air tasking message			
ATO	air tasking order		F-	fighter aircraft
ATP	Allied Tactical Publication, *also* advanced targeting pod		FAC	forward air controller
			FAC(A)	forward air controller (airborne)
AWACS	Airborne Warning and Control System		FEBA	forward edge of battle area
BAI	battlefield air interdiction		FLOT	forward line of own troops

FM	Field Manual, *also* frequency modulation	JRTC	Joint Regional Training Center
FO	forward observer	JSAK	joint attack of the second echelon
FORSCOM	Forces Command		
FSCL	fire support coordination line	JSEAD	joint suppression of enemy air defenses
GAO	Government Accounting Office		
		JSON	joint statement of operational need
GEOINT	geospatial intelligence		
GLO	ground liaison officer	JSORD	joint system operational requirements document
GPS	Global Positioning System		
HAC-D	House Appropriations Subcommittee on Defense	JSTARS	Joint Surveillance and Target Attack Radar System
HASC	House Armed Services Committee	JSUPT	Joint Specialized Undergraduate Pilot Training
HIV	human immunodeficiency virus	JTACMS	Joint Tactical Missile System
		JTIDS	Joint Tactical Information Distribution System
HUMINT	human intelligence		
ICBM	inter-continental ballistic missile	JUON	joint urgent operational need
		KICAS	kill box interdiction close air support
IED	improvised explosive device		
ILO	in lieu of	LANTIRN	Low-Altitude Navigation and Targeting Infrared for Night
IMINT	imagery intelligence		
IOC	initial operational capability	LARA	light attack and reconnaissance aircraft
IR	infrared		
ISAF	International Security Assistance Force	LAS	light air support
		M-	multi-role aircraft
ISR	intelligence, surveillance, and reconnaissance	MAC	Military Airlift Command
		MACV	Military Assistance Command for Vietnam
JACCE	Joint ACCE		
JAGO	Joint Air-Ground Operations Office	MCO	major combat operations
		MNF-I	Multi-National Force—Iraq
JAGOC	joint air-ground operations center	MOOTW	military operations other than war
JCS	Joint Chiefs of Staff	MRAP	mine-resistant ambush protected vehicle
JDAM	Joint Direct Attack Munition		
JEDI	Joint Expeditionary Digital Information System	NAS	Naval Air Station
		NATC	Naval Air Training Command
JET	joint expeditionary tasking		
JFDG	Joint Force Development Group	NATO	North Atlantic Treaty Organization
JOA	joint operations area	NAVAV-SCOLSCOM	Naval Aviation Schools Command
JP	Joint Publication		
JPATS	Joint Primary Aviation Training System	NDAA	National Defense Authorization Act
JROC	Joint Requirements Oversight Council	NORAD	North American Aerospace Defense Command

NPATS	Naval Primary Aviation Training System	SCAR	strike coordination and reconnaissance
NTC	National Training Center	SCAR/C	strike coordination and reconnaissance coordinator
NTISR	non-traditional ISR		
OAS	offensive air support	SDB	small-diameter bomb
OCA	offensive counter-air	SEAD	suppression of enemy air defenses
OCO	overseas contingency operations		
		SECDEF	Secretary of Defense
ODIN	Observe, Detect, Identify, and Neutralize	SIGINT	signal intelligence
		SOCOM	U.S. Special Operations Command
OEF	Operation Enduring Freedom		
OIF	Operation Iraqi Freedom	SOF	special operations forces
OPTEVFOR	Operational Test and Evaluation Force	SON	statement of operational need
		SOS	special operations squadron
ORD	operational requirements document	SLEP	service life extension program
OSD	Office of the Secretary of Defense	SPO	special program office
		SUPT	Specialized Undergraduate Pilot Training
OT&E	operational test and evaluation	TAC	Tactical Air Command
PA	public affairs	TACP	tactical air control party
PATS	Primary Aviation Training System	TACS	tactical air control system
		TF	task force
PLSS	Precision Location Strike System	TFX	Tactical Fighter Experimental
		TIMS	Training Integration Management System
PMD	program management directive		
		TOR	terms of reference
POM	program objective memorandum	TRADOC	Training and Doctrine Command
PPBS	Planning, Programming, and Budgeting System	TTPs	tactics, techniques, and procedures
Q-	unmanned aircraft	TTTS	Tanker-Transport Training System
R-	reconnaissance aircraft		
RAF	Royal Air Force	UAV	unmanned aerial vehicle
RD	relative discontent	U.N.	United Nations
RFP	request for proposal	UPT	Undergraduate Pilot Training
ROMO	range of military operations	USA	U.S. Army
SAC	Strategic Air Command	USAF	U.S. Air Force
SAC-D	Senate Appropriations Subcommittee on Defense	USMC	U.S. Marine Corps
		USN	U.S. Navy
SADL	Situation Awareness Data Link	VHF	very high frequency
		WDAF	Western Desert Air Force
SAR	search-and-rescue	WPTO	Western Pacific Theater of Operations
SASC	Senate Armed Services Committee		
		WIC	Weapons Instructor Course
SATCOM	satellite communication	XP	plans and programming

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CHAPTER ONE

MIXED SIGNALS ABOUT JOINTNESS

The Armed Forces of the United States have embraced "jointness" as their fundamental organizing construct at all echelons. Jointness implies cross-service combination wherein the capability of the joint force is understood to be synergistic, with the sum greater than its parts (the capability of individual components).[1]

Joint Publication 1, *Doctrine for the Armed Forces of the United States*
March 2013

Young man, the Soviet Union is our adversary. The Navy is our enemy.[2]

General Curtis E. LeMay, U.S. Air Force
Attributed by George Will, October 2013

I. Introduction–Mixed Signals about 'Jointness'

The United States military sends mixed signals about the extent to which it is a 'joint'

organization. 'Jointness,' borrowing from the epigraphic definition above, is the notion that the

four military services cooperate in their efforts to ensure national security, and is a *de facto* point

of departure for discussions about U.S. military policy.[3] It is an assumption formally entrenched

in public law, propagated by those who observe the defense establishment, encouraged by the

military services, and embraced—perhaps subconsciously—by the general population. In the

realm of public law, major American defense reorganization bills explicitly implore joint-force

effectiveness and management.[4] There have been formal executive structures in place since 1903

to encourage components of the U.S. military to labor in concert.[5] Evidence that outside

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[1] "Joint Publication 1: Doctrine for the Armed Forces of the United States," (Washington DC: Joint Chiefs of Staff, 2013), I-2.

[2] Attributed by George F. Will, "The Sequester: The Hammer Republicans Hold," *The Washington Post*, 14 October 2013. http://www.washingtonpost.com/opinions/george-will-susan-collinss-fiscal-compromise-leaves-democrats-exposed/2013/10/14/ebb32a70-34e3-11e3-be86-6aeaa439845b_story.html.

[3] Official U.S. joint doctrine recognizes *five* military services (the Army, the Navy, the Air Force, the Marine Corps and the Coast Guard), but notes that the Coast Guard is generally situated under the Department Homeland Defense. This dissertation discusses only the four military services aligned under DoD.

[4] See the preambles to *The National Security Act of 1947*, Pub. L.No. 253, 80th Congress, 1st Session (26 July 1947); *The Goldwater-Nichols Department of Defense Reorganization Act of 1986*, Pub. L.No. 99-433, 99th Congress, 2nd Session (1 October 1986).

[5] See Department of the Navy General Order No. 136; Nonserial Documents; Roll 2, M 1421; War College Division and War Plans Division General Records; Records of the Joint Board, 1903-1947; National Archives Building, College Park; Army Headquarters General Order No. 107; Nonserial Documents; Roll 2, M 1421; War College

observers assume jointness to be the normal state of affairs exists in the thousands of media

reports that have referred to a monolithic 'military' or, since it became the official Defense

Department headquarters in 1943, "the Pentagon," implying a unified opinion on military

acquisition, defense spending and military operations.[6] Reading any of the Pentagon's joint

doctrine—a collection of hundreds of pamphlets that cover a range of military topics from

combat tactics to arcane logistics procedures—might lead a casual observer to the conclusion

that close cooperation is the norm. The American public, as represented by the Gallup Poll,

answers clearly and unambiguously about a unified "military" when asked to compare the armed

forces to other national institutions.[7]

 Other evidence, however, reveals national skepticism and institutional schizophrenia with

respect to jointness. Vague presumptions of harmonious cooperation do not hold up to detailed

scrutiny. If the nation has won its largest battles, campaigns, and wars through joint cooperation

on the battlefield, a mantle of jointness rarely adorns quotidian military affairs. Nor is it always

in view when major security issues arise. When President Theodore Roosevelt established the

Joint Board in 1903, he did so realizing that cooperation between the American Army and Navy

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Division and War Plans Division General Records; Records of the Joint Board, 1903-1947; National Archives Building, College Park.

[6] See, e.g., Thom Shanker, "Pentagon Plans Steps to Reduce Budget and Jobs," *The New York Times*, 10 August 2010. http://www.nytimes.com/2010/08/10/us/10gates.html?_r=0; Dion Nissenbaum, "Pentagon Says Afghanistan Needs U.S. Help," *The Wall Street Journal*, 30 July 2013. http://online.wsj.com/news/articles/SB10001424127887324809004578638352586601058; Oren Dorell, "Pentagon Moves Naval Forces Closer to Syria," *USA Today*, 25 August 2013. http://www.usatoday.com/story/news/world/2013/08/23/syria-chemical-attack/2690757/.

[7] Since 1973, Gallup has polled the American public on its confidence in "the military" along with other institutions such as Congress, the Supreme Court, the Presidency, public schools, organized religion, organized labor, etc. See "Confidence in Institutions," Gallup, Inc., accessed 25 November 2013, http://www.gallup.com/poll/1597/confidence-institutions.aspx. In contrast, however, Gallup has also polled since 1949 for opinions about individual services, and the public has no difficulty differentiating distinct preferences for relative prestige and contribution to national defense; see Frank Newport, "Americans See Army, Marines as Most Important to Defense," Gallup, Inc., accessed 25 November 2013, http://www.gallup.com/poll/148127/americans-army-marines-important-defense.aspx.

had grown difficult and elusive.[8, 9] The National Security Act of 1947 and the Goldwater-Nichols

Department of Defense Reform Act of 1986, likewise, did not derive legislative impetus from

outstanding examples of joint cooperation.[10] For the media, the term 'interservice rivalry' is a

real and well-documented phenomenon that applies to more than service academy sporting

events. It manifests at every interface between the services from appropriations bills to command

over forces in harm's way. Members of the defense establishment (who are sometimes

themselves the purveyors of those optimistic joint publications) see the problem firsthand.

Anyone who has observed weapons acquisition, the adoption of operational plans, or even

simple administrative rules that affect more than one service would attest that intense, parochial

responses from the various military departments accompany almost any initiative.

Other than defense insiders, the realm of academia seems to have the clearest vision of how

great the divisions are among the services. For centuries, scholars have realized the difficulties

that inhere in effective combined-arms efforts, the historic intra- and inter-service predecessors

to jointness.[11] Treaties enabling joint or combined action and the politics that make them

possible are notoriously difficult. Accounts as disparate as the Hebrew bible, Sun-Tzu,

Thucydides, Livy, and Niccolo Machiavelli demonstrate that military cooperation—when it

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[8] At the direction of the President, two separate orders from the Department of the Navy (18 July 1903) and the Department of War (20 July 1903) established the Joint Board; see G.O. 20, 30 June 1924; Jnt Board Class. Corr.; WCD & WPD GR; RG 165; NACP; G.O. 20, 30 June 1924; Jnt Board Class. Corr.; WCD & WPD GR; RG 165; NACP.
[9] The Joint Board's charter directed it to meet "for the purpose of conferring upon, discussing, and reaching common conclusions regarding all matters calling for the cooperation of the two services." The vague, tautological reference to cooperation inhibited the generals and admirals from forging "a permanent interservice institution," with personal relationships continuing to facilitate or inhibit joint cooperation as they had prior to the Board's formation. Jason Robert Godin, "Coordinating Rooks and Bishops: An Institutional History of the Joint Army and Navy Board" (Master's Thesis, Texas A&M University, 2004), 22-23.
[10] The latter legislation is hereafter referred to as 'Goldwater-Nichols' or 'the Goldwater-Nichols Act.'
[11] The terms *joint arms* and *combined arms* indicate, respectively, coordinated effort among the services of a single nation and at least one service from two or more nations. Per Gray, "Anglo-American usage now agrees that 'joint' operations are those conducted by the forces of more than one armed service, while 'combined' operations are those conducted by more than one country. Until quite recently, 'combined' operations in British usage referred to what now are mean by 'joint' operations;" see Colin S. Gray, *Modern Strategy* (Oxford: Oxford University Press, 1999), 240n.

happens—is fleeting, given to the whim of individual and organizational self-interest, and often preyed upon by perfidy.[12]

For decades, scholarly works have explicitly described, even in an American context of military "unification," the pulling and hauling of bureaucratic politics that characterize interactions among the services, the Department of Defense, and elected officials.[13] Huntington's "inter-branch rivalry" is an innate part of the way he models pluralistic American defense strategies.[14] Writing immediately prior to the Goldwater-Nichols reforms of 1986, Thomas MacKubin Owens offered a pessimistic prognosis for joint institutions. He recognized the difficulties of overcoming the exogenous defense bureaucracy, and highlighted Gordon Keiser's view of the underlying strategic dilemma: an inability "to predict and control the actions of possible enemies."[15] Carl Builder lamented the inability or unwillingness of the Joint Chiefs of Staff, the organization best suited to make informed judgments about needed tradeoffs among

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[12] Sennacherib's field commander chided Hezekiah, the Judean king, for his reliance on Egypt's alliance, "that splintered reed of a staff, that pierces a man's hand if he leans on it!" See Isa. 36:6 (NIV 1984). "There is no place where espionage is not used" sums up the Chinese philosopher's appreciation of double agents and exploited allegiances; see Sun-Tzu, *The Illustrated Art of War*, trans. Samuel B. Griffith, (New York: Oxford University Press, 2005), 236. Examples of intrigue and broken alliances are legion in Thucydides, but the havoc wreaked in Peloponnesus by Alcibiades' ever-changing allegiances to Athens, Sparta, and Persia puts a fine point on the practice; see Thucydides, *The Landmark Thucydides: a Comprehensive Guide to the Peloponnesian War*, ed. Robert B. Strassler, trans. Richard Crawley, 1st Touchstone ed. (New York, NY: Simon & Schuster, 1998), 395, 413, 502, 27. Similarly, broken treaties between nearby groups of people who had pledged each others' common defense appear regularly in the history of Rome; see Livy, *Rome and Italy*, trans. Betty Radice, (London: Penguin Group, 1982), 156. Machiavelli advised an imagined ruler who has just consolidated power to be "disposed to change according as the winds of fortune and the alterations of circumstance dictate;" see Niccolo Machiavelli, *The Prince*, trans. Daniel Donno, Bantam Classic ed. (New York: Bantam Dell, 2003).

[13] For an outline of the relevant DoD participants and their civil-military relationships, see Samuel P. Huntington, *The Soldier and the State: The Theory of Politics and Civil-Military Relations* 1985 ed. (Cambridge, MA: Harvard University Press, 1957), 428-55.

[14] Ibid., 418-22. Huntington's "interbranch" is equivalent to 'inter-service' in this work.

[15] The quotation describes "strategic monism," and is from ibid., 418. Owens' skepticism over JCS reform centered on the idea that the U.S. had an existing defense structure that favored Huntington's "strategic pluralism," which in Keiser's words "calls for a wide variety of military forces (or services) and weapons to meet a diversity of potential threats;" Gordon W. Keiser, *The U.S. Marine Corps and Defense Unification, 1944-47: The Politics of Survival* (Washington DC: National Defense University Press, 1982), 121. Both Huntington and Owens viewed pluralism as the more realistic and professional approach to defense. Owens believed that reformers favored strategic monism, which in practice meant withdrawing money from the Navy to build up the Army in Europe. Strategic monism presupposes knowledge of the most likely future enemy and war scenario, or, more cynically, that land power advocates simply want more resources; see MacKubin Thomas Owens, "The Hollow Promise of JCS Reform," *International Security* 10, no. 3 (1985): 106-07.

military forces, objectives, and risks, to fulfill this role. Instead, he scolded that when the nation needs full accountings of military options, associated costs and inherent risks, "the JCS is, regrettably, not the place to get them."[16] Ian Horwood remarked on the constancy of inter-service rivalry and the tendency of the services to measure their success in terms of resources they deny their sister services.[17] Professional congressional staffers and civil servants with defense responsibilities also have an unencumbered view of this *Schadenfreude*. James Locher's portrayal of "service supremacists" in the Pentagon described influence peddlers who put preference and independence over warfighting capability.[18] Thomas Ehrhard contrasted the fierce rivalries that rage on among the services with the simplistic notion that the defense establishment takes unified positions.[19] David Johnson asserted that joint doctrine sometimes heightens inter-service tensions rather than providing the unity it purports.[20]

Yet even in those circles where the obstacles to jointness are most apparent, there is still a desire to see more of the cooperative ethic it represents. Samuel Huntington, in his foundational treatise on civil-military affairs, called on the civilian masters of the U.S. military to allow the "military spirit" to live on because "military life subordinates man to duty for society's purposes."[21] Huntington founded his optimism on a monolithic view of the military as well, and his sentiment reflects an assumption that the institution as a whole has a self-denying ability to

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[16] Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: Johns Hopkins University Press, 1989), 151.

[17] Ian Horwood, *Interservice Rivalry and Airpower in the Vietnam War* (Fort Leavenworth, KS: Combat Studies Institute Press, 2006), 2.

[18] James R. III Locher, *Victory on the Potomac: The Goldwater-Nichols Act Unifies the Pentagon* (College Station: Texas A&M University Press, 2002), 15.

[19] Thomas P. Ehrhard, "Unmanned Aerial Vehicles in the United States Armed Services: A Comparative Study of Weapon System Innovation" (Doctoral Dissertation, Johns Hopkins University, 2000), 58.

[20] David E. Johnson, *Learning Large Lessons: The Evolving Roles of Ground Power and Air Power in the Post-Cold War Era* (Santa Monica: RAND Corporation, 2007), 49.

[21] Huntington, *The Soldier and the State*, 465. The description of the "military spirit" parallels the idea of the public service ethic that is a core discussion in public administration research. Huntington explicitly contrasts the differences in outcome wrought by the military public servant with the for-profit businesses at work in downtown Highland Falls, NY, for example. His description of the disorder of the for-profit sphere contrasts unfavorably with the calm order West Point's military academy reservation.

work for the best possible national outcomes. Builder called for the furtherance of true, guileless joint cooperation as he concluded his exposé of the service cultural tendencies.[22]

Writing about cooperation between air and ground forces in the Second World War, David Spires lifted up "mutual trust, respect, and a common mission-directed interest."[23] The sentiment arises from the most basic reason for seeking jointness: it leads, ostensibly, to increased military efficiency and defense capability. Unity of command, a benefit of jointness extolled by Clausewitz and other scholars of military strategy, cannot be extricated from victory in modern war.[24, 25] Ehrhard expressed a desire for a "catalyst" who understood the various services' innovation paradigms well enough to enable more efficient weapons-system integration.[26] Monte Cannon, who wrote at length about the difficulty of achieving battlefield synergy among the services, nonetheless espoused "crafting a unifying vision of victory as a foundation for joint command and control."[27] Jeffrey Donnithorne examined the challenges to jointness executed within the military bureaucracy, but deemed the pursuit of cooperation worthy, putting the onus on civilian masters to craft coherent policy and legislation that facilitate jointness and prevent

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[22] Builder, *The Masks of War*, 206.

[23] David Spires, "Patton and Weyland: A Model for Air-Ground Cooperation," in *Airpower and Ground Armies: Essays on the Evolution of Anglo-American Air Doctrine 1940-1943*, ed. Vincent Orange, et al. (Maxwell AFB: Air University Press, 1998), 316.

[24] Clausewitz' writing focused on land armies and offered little discussion of the military capabilities associated with other services today. But his clarion call to "put the largest possible army into the field," advocacy for "skillful concentration of superior strength," and instruction for the "simultaneous use of all means intended for a given action" stresses the need for unity of command among joint forces, which were in his era different branches of the same service; see Carl von Clausewitz, *On War*, ed. Michael Eliot Howard and Peter Paret, trans. Michael Eliot Howard and Peter Paret, Rev. ed. (Princeton NJ: Princeton University Press, 1984), 195,97,205.

[25] Gray, noting Clausewitz' neglect of naval matters and the weakness it induced in *On War*, cites the need for contributions by each service in specialized geographic domains in achieving a strategic whole. He argues that the means to achieve sound strategy is not through unification—even though the forces are increasingly interdependent on each other—but rather effective joint employment of forces in the correct balance for an ongoing conflict; see Gray, *Modern Strategy*, 212.

[26] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 635.

[27] Monte R. Cannon, "Cleaning Up the Joint: Command, Control, and Agency in American War Fighting" (Doctoral Dissertation, Air University, 2012), 299.

uncooperative shirking.[28] Unless the epigraph that opens this chapter is a cynical ruse designed

to fool outsiders who read military doctrine, the military services themselves seem eager to

behave in a cooperative manner—even if their members might not agree with all of the

definitions used in and principles espoused by joint doctrine.[29]

The reasons for jointness seem obvious from a first-order, rational view of U.S. military

history. Joint operations have enabled the most visible and significant military successes—how

could the D-Day landings of World War II have happened without coordination among the

military branches and services?[30, 31] Robert Scales argued, "Only 100 ground combat hours were

necessary for the Army to re-establish itself convincingly as a successful land combat force" in

Desert Storm.[32] To those who felt that Desert Storm marked the end of inter-service infighting

and validated the wisdom of Goldwater-Nichols by proving jointness a *fait accompli*—a

common sentiment immediately after the conflict—success of this magnitude was impossible

without all services working together.[33] Cannon argued that Desert Storm in no way served as an

impeccable example of joint cooperation, however. Instead, the untouchable supremacy of the

U.S. military juggernaut was able to roll over a feeble Iraqi resistance even though the American

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[28] Jeffrey W. Donnithorne, "Principled Agents: Service Culture, Bargaining, and Agency in American Civil-Military Relations" (Doctoral Dissertation, Georgetown University, 2013), 517.

[29] In an article describing and advocating *jointness*, Lawrence Wilkerson explicitly disagreed with the assertion that it brings about synergy; see Lawrence B. Wilkerson, "What Exactly is Jointness?," *Joint Forces Quarterly*, no. 16 (1997): 66.

[30] While noting that joint cooperation is a necessity for military success, this work does not take the view that it is also *sufficient* for victory. *Blitzkrieg* warfare—a flawless interweaving of joint arms application but absent a coherent operational design—is a potent contrary example; see Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory* (London: Frank Cass, 2004), xv.

[31] For an opinion that multi-service joint operations were essential for victory in WWII, in a work that examines the conflict from an air power-centric perspective, see Richard J. Overy, *The Air War 1939-1945* Potomac Books 2005 ed. (London: Europa Publications Ltd., 1980), 203.

[32] Robert H. Scales, Jr., *Certain Victory: The U.S. Army in the Gulf War* Brassey's paperback ed. (Herndon: Brassey's, 1997), 5.

[33] For an Army general exhorting Army personnel to remember the contributions of the Navy and Air Force to the Desert Storm effort, see H. Norman Schwarzkopf and Peter Petre, *It Doesn't Take a Hero* (New York: Bantam Books, 1992), 575-76.

services suffered "significant incongruity of often disparate operations and the presence of somewhat familiar tensions at the seams between components."[34]

When jointness fails, as it has visibly several times since the World War II experience that led President Dwight Eisenhower to declare single-domain, single-service warfare "gone forever," the nation seems to weaken itself on the stage of international affairs, humbled by a visible reduction in its ability to exercise military power.[35] David Armstrong correspondingly noted that inter-service agreement about the need for effective joint control of fighting forces is strong during times of conflict but its achievement wanes during peacetime.[36] According to the Senate Armed Services Committee report preceding the Goldwater-Nichols reorganization in 1986, failures in the Vietnam War, the taking of the U.S.S. *Pueblo*, the botched rescue attempt of the Iranian hostages, and the Grenada incursion were all failures to adequately implement unity of command.[37, 38] The primary joint-doctrine publication asserts, "the challenges to the U.S. and its interests demand that the Armed Forces operate as a closely integrated joint team."[39]

From within and without the military establishment, then, joint cooperation's role in military effectiveness is on clear display and in demand by those who work to solve security

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[34] Cannon, "Cleaning Up the Joint," 116.

[35] Dwight D. Eisenhower (President of the United States), special message to the Congress on Reorganization of the Defense Establishment, 3 April 1958.

[36] David A. Armstrong, "Jointness and the Impact of the War," *Joint Forces Quarterly*, no. 8 (1995): 36. Psychological research and foreign policy research refers to this phenomenon as "rallying around the flag" (foreign policy) or in-group cohesion triggered by a perceived external threat; see Lina M. Svedin, *Organizational Cooperation in Crises* (Burlington: Ashgate Publishing Company, 2009), 2. William Baker and John Oneal found that the "rally effect" depends a great deal on the "spin" that accompanies presentation of a threat to the public; see William D. Baker and John R. Oneal, "Patriotism or Opinion Leadership? The Nature and Origins of the 'Rally 'Round the Flag Effect'," *Journal of Conflict Resolution* 45, no. 5 (2001).

[37] The U.S.S. *Pueblo* was seized by North Korea on 23 January 1968, and its crew was released on 23 December 1968. North Korea still holds the ship; The Capture of the USS Pueblo and Its Effect on SIGINT Operations (Declassified 20 Dec 2006); Special Series Crisis Collection Volume 7 (DOCID: 3075778; REFID: A632597); United States Cryptologic History; George Washington University National Security Archive, Washington DC, 1,134.

[38] U.S. Senate, Committee on Armed Services, *Defense Organization: The Need for Change: Staff Report to the Committee on Armed Services*, 99th Congress, 1st Session session, 16 October 1985, 7.

[39] The quote is taken from the "Capstone" joint doctrine publication; see "Joint Publication 1: Doctrine for the Armed Forces of the United States," i.

problems on the battlefield. However, any experienced observer of the U.S. military would be

hard-pressed to find such sentiment in debates about individual services' budgets, responsibilities,

or primacy in securing the national defense.[40] There, the same services that cooperate on

battlefields around the world compete, Janus-faced, with a visceral intensity that appears to

derive from something other than rational responses to national threats. The dichotomy between

the need for combat cooperation and the pitched inter-service battles that occur over procurement

of the equipment, platforms, and systems that ultimately enable that cooperation is perhaps the

most obvious source of mixed signals about jointness. The structural realities of the military-

industrial complex and congressional involvement therein seem to allow and exacerbate conflict

among the services, even though official rhetoric almost always points to a desire and need for

cooperation.

Ehrhard explained that Congress demands evidence of cooperation among the services for

platforms and systems that are similar in the missions they conduct, such as an advanced fighter

aircraft.[41] Yet in the testing, fielding, and integration of these materiel acquisitions, the services

are left as independent final arbiters. This dynamic ensures minimal efforts at cooperation and

incessant turf battles to acquire systems that meet a particular service's perception of the best

equipment, pursuits that come at the expense of compromise and maximum economies of scale.

As with military doctrine, the rhetoric of 'commonality' and, later, 'jointness' filled—and

continues to fill—many reports justifying large acquisition programs even while they flounder in

the waste and inefficiency of internal bickering. The TFX fighter aircraft under Secretary of

Defense Robert McNamara's administration and the current F-35 acquisition are prominent

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[40] See, e.g., the Navy's "impassioned testimony" and the accompanying doctrinal disputes with the Air Force aired before the House Armed Services Committee in 1949 described by Jeffrey G. Barlow, *Revolt of the Admirals* (Washington, DC: Ross & Perry, Inc., 2001), 294.
[41] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 476-77.

examples.[42, 43] Sources of the failure are not confined to defense executive management. Harvey Sapolsky, Eugene Gholz, and Caitlin Talmadge took the services to task for becoming deceptive "champions of jointness" to shepherd major acquisitions projects through Congress while burying any real ideological conflicts in bland Quadrennial Defense Review reports that paper over differences and avoid recommendations for change in the actual force structure that might threaten.[44]

To adapt William Martel's words about the concept of military "victory," there seems to be "no theory or precise language that permits policymakers, military officials, and the public to agree on what" *jointness* means or when it has been attained.[45] To some, the term refers to effective battlefield coordination among the services. To others, it is a synonym for acquisition commonality among the services. David Mets has asked if jointness is not simply what the services do if they feel they are not being treated fairly, whether it be with respect to budget share, credit for victory, or favorable attention from the larger defense establishment. If one service perceives a slight in any area, it can clamor for more "jointness" and thus bring its more prosperous teammates back in check.[46] Understanding the disparate uses of the term is critical. While service bureaucracies may wage battles against one another, the forces fielded by those services need to fight well together against a common enemy. Reconciling the tension between

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[42] See, *inter alia*, Robert F. Coulam, *Illusions of Choice: The F-111 and the Problem of Weapons Acquisition Reform* (Princeton: Princeton University Press, 1977); Robert J. Art, *The TFX Decision: McNamara and the Military* (Boston: Little, Brown, 1968).

[43] The understatement of challenges to the F-35 program in an internal defense acquisition report give the best idea of the scope of problems; see "Selected Acquisition Report: Joint Strike Fighter." Arlington: F-35 Lightning II Program Office, 2011.

[44] Harvey M. Sapolsky, Eugene Gholz, and Caitlin Talmadge, *U.S. Defense Politics: The Origins of Security Policy* (New York: Routledge, 2009), 128-29.

[45] This sentence restates Martel's claim about the ambiguity of the term "victory," simply substituting "jointness" where he used "victory." See William C. Martel, *Victory in War: Foundations of Modern Military Policy* (Cambridge: Cambridge University Press, 2007), 3.

[46] David R. Mets, "A Glider in the Propwash of the Royal Air Force? Gen. Carl A. Spaatz, the RAF, and the Foundations of American Tactical Air Doctrine," in *Airpower and Ground Armies*, ed. Daniel R. Mortensen (Maxwell Air Force Base AL: Air University Press, 1998), 81.

the bureaucracy and the fielded force is a main drive of this study. It attempts to catalogue the

dynamics affecting military organizations that promote and stifle jointness. The next section

describes the research question and its relevance in greater depth.

II. Research Question and Its Application

Evidence that a desire for jointness on the battlefield exists alongside bureaucratic behaviors that

do not reflect a cooperative bent creates a quandary for those charged with leadership of the

national military establishment. Just as civilian leaders may justifiably expect the military to

comply with duly issued guidance, they may expect—along with the civilian population as a

whole—that the military will make an effort to cooperate to promote national security.[47] On the

face of it, military cooperation would allow the services to maximize the amount of security they

provide with the resources they have. Conversely, if the services in fact do not often cooperate or

even deliberately choose to not cooperate, the result would be a relative loss of national security.

Every time examples of inter-service rivalry surface, one must grapple with the notion that the

nation's defense establishment operates—and deliberately so—with inefficiency.[48] Yet there is

no formal theory that scholars have applied to the military to explain why this is the case,

whether it does undue harm to national security, or if there are ways to ameliorate that harm.

Inherent in the realization that the military services do not always behave as if they have a

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[47] Huntington describes "objective" civilian control of the military: "A highly professional officer corps stand ready to carry out the wishes of any civilian group which secure legitimate authority within the state; Huntington, *The Soldier and the State*, 84. Described in Donnithorne, "Principled Agents."

[48] Because of the inherently unpredictable nature of military threats, all militaries must maintain some slack capacity to succeed when stressed. Indeed, there is something to the Sun-Tzuian argument that the most effective military is one that consists completely of slack capacity (i.e., it never fights because it deters all opponents with 100% effectiveness). Thus, a logically appropriate first-order assessment of military capability should always prioritize effectiveness or efficacy above efficiency. This does not mean that inefficiency is favorable to or should be encourage in a military; to the contrary, unchecked inefficiency can lead to ineffectiveness. The subtle difference here lies in contrasting a self-induced, harmful, and avoidable inefficiency (the lack of ability or desire to cooperate among services) with a natural, unavoidable inefficiency (the requirement for slack capacity).

unifying purpose in securing the U.S. and its interests is a knowledge gap about the phenomenon that prevents exploiting it for constructive ends.[49]

Jointness through organization: the Canadian model
Striving for jointness among disparate armed services of course begs the question of why those services do not simply unify into a single bureaucracy held responsible for fighting and winning the nation's wars. This is the Canadian model, entrenched in an executive proposal published in 1964.[50] Since 1968, the formerly separate services have served as a "single entity—the Canadian Forces—divided along environmental or functional lines."[51] In adopting this model, Canada theoretically forgoes to a degree the individual service competencies that organize, train, and equip specialized forces to be most effective in distinct domains. Discussion with senior Canadian military leaders revealed, however, that there is a disparity between the model entrenched in law and policy papers and what happens in practice. According to Brigadier-General Michael Dabros, integration and unification happened to the Canadian Forces as a unilateral cost-saving move by the government in the 1960s; a commensurate change of institutional mindset did not necessarily follow.[52] Lieutenant-General Stuart Beare, the commander of Canada's Joint Operations Command, said pointedly that jointness "is not an

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[49] Part of the reason for this appearance is structural; the services themselves do not go to war, they simply organize, train, equip, and present forces to "joint force commanders." These joint commanders are themselves military leaders (having a particular service identity) who are delegated the authority to plan and execute the nation's wars is designated geographic areas or perform functionally specific military tasks in response to the direction of national command authority. The three-department, four-service model contrasts with that of Canada, who maintains a single "Armed Forces" to organize, train, and equip forces to present to combat commanders. Canada, viewing itself as resource-constrained (but desiring to fulfill its commitments to allies such as NORAD and NATO), favors military efficiency and sacrifices some of the independent views and strategic plurality that come with multiple services.
[50] "White Paper on Defence," (Ottawa ON: Canada Department of National Defence, 1964).
[51] Joel J. Sokolsky, *Canada, Getting It Right This Time: The 1994 Defence White Paper* (Carlisle Barracks PA: Strategic Studies Institute, U.S. Army War College, 1995), 4.
[52] According to Dabros, "[W]e had integration forced on us in the '60s. We had a government that wasn't happy with what defense cost them—they viewed it as a discretionary part of their budget. So they forced integration of certain functions—recruiting, professional military development, etc. The government saw it that they were paying three different times to do the same things. So they forced integration on the military…with the intent that they would eventually force unification—which legally they did, and legally today we exist as a single entity—the Canadian Forces, a single service;" Michael R. Dabros (Brigadier-General (ret.), Canadian Forces, O.M.M., C.D.; former Commander (2011-2013), Canadian Defence Liaison Staff, London), telephonic interview with the author, 7 February 2014.

organizational construct."[53] Changes to the law purported a drastic cultural shift, but even though

significant artifacts like distinct uniforms and separate headquarters vanished, the domain

specificity of air, land, and sea service never diminished.[54] Since economic concerns and

redundant services drove the discussion, not concern over a specific military capability, neither

the government nor the military establishment ever addressed the issue of joint force

development.[55]

For Canada, the resultant outcome was a military force whose budget had been trimmed as

if it enjoyed all the efficiencies of a fully unified fighting force, but that in fact retained separate

structures and demands for resources based on the distinct environments or domains in which

warfare occurred.[56] Even the Royal Canadian Air Force, which disappeared after the 1960s

reorganization and was parsed out among the land and naval forces, returned later in the

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[53] Stuart A. Beare (Lieutenant-General, Canadian Forces, C.M.M., M.S.C., M.S.M., C.D.; Commander, Canadian Joint Operations Command), telephonic interview with the author, 27 February 2014.

[54] Dabros: "The grand vision of the 1960s was, 'We're going to force these guys to unify. We're going to take away their services. We're going to take away their uniforms.' Well, we've gotten all that stuff back [in 2011, the individual service names returned to official parlance]. And all that did was reinforce the culture that had never really left;" Dabros interview, 7 February 2014.

[55] According to Beare, the Canadian military "aspires to the idea that service leadership are joint commanders, and that 'service' leaders are responsible to conceive, design, and build the force to win the joint fight in environmental warfare domains;" Beare interview, 27 February 2014. (Since Canada does not officially maintain separate 'service' identities apart from the Canadian Forces, but informal identification with one's primary fighting domain is the norm, 'environment' and 'service' are largely interchangeable terms in Canada, especially when comparing its military to that of other nations.) Dabros: "Our 'environment' chiefs are force generators, then we have a joint force employer [the Commander, Canadian Joint Operations Command]. Those force providers…have no training mechanism that generates joint force packages. One of the biggest problems was that the government never addressed—they left it to the military—how we were going to do force development. They created the office of the Chief of the Defence Staff [CDS], but they—the government—and the military never really grappled with this problem of how you do joint force development; Dabros interview, 7 February 2014. Whether one accepts Beare's optimistic outlook or Dabros' slightly more pessimistic take, the outcome is that jointness has to be conceived and implemented by those whose formative experiences took place primarily in one warfighting domain. This is true even in Canada, whose desire to limit the domain identification of its military force could not eliminate the need to specialize in those domains to retain warfighting capability.

[56] Dabros continued, "We're not like a Marine Corps or anything. We have 'environments,' but the environments are still very cloistered and parochial. They still compete for resources, they still have the culture of their environment, and they've never, ever been able to beat that out of us. One of the big heartaches pre-unification was that they couldn't get the military to advise them with a single voice. The [service chiefs] always spoke from their own parochial viewpoints. The government was always getting mixed messages, and one of the goals of unification was to get the military to speak with a single voice through the CDS. They wanted to hear a prioritized list of defense needs, instead of being told that all service programs were important and having to make those really tough calls themselves." Dabros interview, 7 February 2014.

incarnation of an air-specific environmental command, so Canada in effect never really lost its 'services,' even if it did not name them as such for a time.

While Canada struggled to reconcile a published desire for unification with the domain-distinct realities of military operations, it also fought internal cultural battles to organize true joint forces. Efforts to create a position that could amalgamate 'environmental' preference into a unified list of joint defense priorities largely failed.[57] Beare emphasized that true jointness does not require subordination of service capabilities to component leadership unified under a joint commander; rather, jointness "is how you think and how you use capabilities to achieve a mission effect—unconstrained by organizational or service bias."[58] This is, as he put it an "ideal or aspirational," state of affairs, and not easily attained in practice, though Canada's pursuit of jointness seems earnest and sincere. Often, Canada's commitment to its international obligations like the North American Aerospace Defense Command (NORAD) and the North Atlantic Treaty Organization (NATO) get in the way of its professed desire to be a more cooperative national military service.[59]

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[57] Dabros: "When the CJOC [Canadian Joint Operations Command] was created, he was given the responsibility to be the champion for joint enablers and things of that nature. And it took 50 years to take that step! About five years ago [2009] we created a "Chief of Force Development;" he was supposed to be that single voice that advised the CDS so he could take it to the government and say, 'This is where we're going.' The way the Chief of Force Development [CFD] was envisioned to work was that he would define the force requirements of the single service— of the Canadian Forces—and that services or service advisors within the CFD organization would basically generate options for how you deliver an effect or a capability. And the CFD created all this process, which we're really good at…with weighted factors for cost and everything else to determine what the preferred solution is for delivering a capability that was in the government's long-term strategy. Well, it's never really worked. They're always tweaking at the edges. They had brought in a CFD 20 years ago; they brought him in as a two-star, so he really had no weight with the 'service' chiefs. And so as a result, he was ineffective. And when we created the Chief of Force Development five years ago, we made the same mistake—we brought him in as a two-star. So he's really not the quarterback he was envisioned to be. He's more a guy trying to force people to work together, to put it politely. So we don't have 'services' anymore; we have 'environments,' but they're still very inward-looking, very parochial, and very competitive when it comes to divide up the limited resources we get as a military;" ibid.

[58] Beare interview, 27 February 2014.

[59] Dabros: "[O]ur Air Force, for example, is very NORAD-centric. They don't think about generating a fighter capability with a primary purpose of supporting a Canadian joint entity that's deployed overseas. Their primary driver for the decisions they make is that NORAD piece, and their desire to form part of coalition operations. And that decision-making process doesn't take place in a Canadian-joint environment; they take place in a multi-national, joint and combined environment;" Dabros interview, 7 February 2014.

Although Canada has become more 'joint' in its approach to military operations than it was five decades ago, its leaders concede that the improvements are based more on the results of combat and peacekeeping deployments than they are any deliberate intellectual process or bureaucratic restructuring. Cost savings based on prioritized defense requirements remain elusive.[60] Canada relies on the leaders of its military domains—land, sea, and air—to think as joint commanders. These leaders are charged with building the command-and-control, intelligence, force protection, and force sustainment structures that integrate cross-domain capabilities in successful joint operations.[61] Canadian senior military leaders are quick to concede that their forces are small, and that the scope of the problem they face is modest. Even small-scale aims do not mean success is always within grasp, though. "As a rule, we don't employ jointly, even though that's our intent. We've just never put the pieces in place that support that approach to doing business," said Dabros.[62]

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[60] Dabros said that joint capabilities came as a result of fielding a significant force in Afghan operations. "In Afghanistan, where our commitment from a Canadian perspective was relatively large—at times close to 5,000 people—there were enough elements from the various services…so that task force commander actually had the closest thing we've ever had to joint capability going out the door. During the period we were in Afghanistan, it wasn't so bad, because the government filled the coffers for us. And we took advantage of it, probably to go above and beyond the government's intent. We started to address the hollowing out that had taken place in the '90s. So now we're in trouble with it. The government tells us we've grown fat in the tail, and they want to cut it off. We found a way to live beyond our means, and it's because we didn't make cost decisions from a centralized force development perspective. We still tried to listen to everyone and satisfy all the 'services.' As a result, you're seeing what look like—from the outside—some pretty draconian decisions;" ibid. His comments echo the feelings of many U.S. flag officers, who feel that one of the most positive aspects of the recent conflict in Afghanistan and Iraq is the level of joint cooperation it has helped foster.

[61] Beare provided a verbal sketch of how Canada views joint operations, enablers of joint actions, and the relationship between services and joint force commanders: "The capacity to prosecute joint operations at the tactical level is framed operationally…the systems that provide for all-domain situational understanding and the design and delivery of operations in the warfighting domains—air, land, maritime, and cyber—the systems that allow you to provide capabilities within and across each of those domains comes at the operational level. The underlying joint capabilities to make that happen are command and control, ISR [intelligence, surveillance, and reconnaissance], force protection, and sustainment…we look at our 'service chiefs' as the guys to conceive, design, and build…to help steer the build of the force so we can succeed in the land warfare domain, maritime warfare domain, or air warfare domains. And the operational commander—me—I'm seeking to drive the concepts for and the design and build of the C4ISR [command, control, computers, communication, and ISR], force protection, and sustainment capabilities that enable the tactical warfare domains and then allow integration across domains;" Beare interview, 27 February 2014.

[62] Dabros went further in his assessment of unification: "To me, the government's attempt to force this joint approach on us isn't working, and the indicator of that is how we still do force development. In practical terms, our

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The Canadian example shows that whether in a nominally unified military force or one with distinct services, lack of true jointness threatens to cancel the dividends of having domain-specific capability if individual service members, appropriately trained and outfitted for action in a given environment, cannot then fight effectively together under a joint force commander. In a country where military resources are more plentiful, the plurality of having four separate services and a separate special operations command should, in the ideal, imbue the U.S. military with passion and expertise that enable the most effective warfighting—this is the argument against complete service unification. Merely professing jointness, though, whether in a U.S. joint-doctrine publication or Canadian law, does not guarantee integrated combined-arms effectiveness. At any rate, Edgar Raines and David Campbell have chronicled the U.S. defense establishment's struggle with the question in the 1960s, when Senator Stuart Symington made a proposal to merge all of the services and create a single general staff under one military leader.[63] This work agrees with Cannon's assessment that this option was politically "untenable then" and remains "likely no more palatable" in the present.[64]

Fundamental research question
Recognizing the enduring disparity between desire and reality, this dissertation seeks to answer a fundamental question about jointness: **"Under what conditions do military services tend to cooperate in solving a security problem, and under what conditions is their behavior**

'service chiefs' produce top-notch 'service' entities that in theory could conceivably form part of a joint force… We never, as a force, had a vision of employing jointly. So, as a result, 50 years later we still don't have a mechanism for employing our force jointly. We generate these great tactical entities—a battle group from the Army; all these different tailored tactical groupings out of the Air Force—but that's as high as it goes. All the services create these great little pieces, but there's no exercising mechanism, there's no structure for integrating them into a joint force. And in reality, we never employ as a joint force;" Dabros interview, 7 February 2014.

[63] Edgar F. Raines, Jr. and David R. Campbell, *The Army and the Joint Chiefs of Staff: Evolution of Army Ideas on the Command, Control, and Coordination of the U.S. Armed Forces, 1942-1985* (Washington DC: U.S. Army Center of Military History, 1986), 98-100.

[64] Cannon, "Cleaning Up the Joint," 297. The sentiment has not disappeared, however. William Lind still advocates that "general staff of the type developed by the Prussians" would be the most effective way to ensure joint cooperation; William S. Lind (author and commentator; former legislative aide for military affairs (1977-1986) for Senator Gary Hart), telephonic interview with the author, 1 July 2014.

divergent?" The concept of *cooperation* in pursuit of a *solution* is central. Absent cooperation, there is no jointness, which may be fine if a viable military solution is anyway attained. Without solutions, jointness, even if it exists, is irrelevant or harmful, since success in pursuit of national objectives is the only rational reason to raise and sustain a military force. A careful answer to this question should clarify the definitional ambiguity of jointness and at the same time help with the pursuit of jointness' most useful side effect—military effectiveness. This dissertation takes a three-phase approach to answer this question.

Phase 1: The first phase considers theories that address jointness from conceptual and behavioral perspectives. The pertinent scholarship can be divided broadly into two types, including theories that:

1) explain organizational cooperation (or lack thereof) in a general way that may apply to military organizations, or

2) explain other behaviors of military organizations in a way that may illuminate cooperative mechanisms.

Several disciplines offer theoretical tenets about the behavior of organizations that are similar to military organizations. Others describe the military with respect to institutional phenomena that are not cooperation *per se*, but whose theoretical approach permits extrapolation of ideas about cooperation. Examples of theories from other disciplines suggest additional questions to complement the central research question. From organization theory, for example, this investigation borrows "How do external threats, bureaucratic politics, and political maneuvering influence jointness?"[65] Organizational cooperation theory offers, "Do military services make decisions about jointness in a context of crisis?" and "How does the perceived urgency of a

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[65] See Graham T. Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis* 2nd ed. (New York: Longman, 1999), 155-56.

dilemma affect decision and cooperation mechanisms?"[66] As an example of theory that applies directly to the military, explanations of doctrinal innovation ask, "How do the mechanisms that lead to doctrinal improvement advance or hinder jointness?" The field of civil-military relations inspires, "Do the means of ensuring civilian control of the military in a democracy encourage or discourage jointness?" While not defining jointness outright, these areas of theoretical study all raise questions with a nexus in the topic. Knowledge of these theories from various disciplines and the questions they raise informs the next two stages.

Phase 2: The second phase of the research examines representative examples of joint military cooperation. Although there is a strong bureaucratic tendency for the military services to not cooperate, there is also a set of examples where services have worked together with visible effort to further shared national security goals.[67] In looking for examples of apparent cooperative *success*, the work follows Rosen, who in investigating military innovation focused on "successful instances of military innovation, because in bureaucracies the absence of innovation is the rule, the natural state."[68] Using case-study selection criteria amenable to pre-theory development, the work limits this candidate pool of cooperative efforts to three case studies. They endeavor to identify the conditions under which cooperation occurred. Since organizational dynamics inform many of the explanations of why cooperation would ordinarily not happen, those dynamics receive special attention in the case studies.

Phase 3: The final stage involves formulating a pre-theory of military cooperation, an attempt to replace ambiguity and amorphous terminology with a more rigorous framework for study and

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[66] See, e.g., Svedin, *Organizational Cooperation in Crises*, 11.

[67] Universal consensus about the quality of a given cooperative effort proves elusive, although one of the case studies in this work, AirLand Battle, receives generally good reviews from scholars.

[68] Stephen P. Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca: Cornell University Press, 1991), 5. To be clear, Rosen's explanatory mechanism for military innovation was intra-service rivalry, specifically the competition of new ideas against established service bureaucracies. This research borrows from Rosen's approach only in its use of apparently *successful cases*; it does not presume intra-service origins of those cases, nor does it rely solely on the explanatory mechanisms he identified.

unequivocal definitions. Taken together, the three phases of research attempt to bring the study of jointness to the first level of specificity discussed by Elinor Ostrom: that of a *framework* for understanding. Examinations of jointness currently lack a means to "organize diagnostic and prescriptive inquiry;" this work seeks to begin that effort while providing a "general list of variables" and "meta-theoretical language" suitable for comparing follow-on study.[69] The theoretical foundation laid in the first phase informs interpretation of the case study observations in the second phase. The robust body of existing theory and its accompanying questions begin to link the conditions observed in the cooperative case studies to the conditions that lead to inter-service cooperation. Jointness, in spite of the doctrinal definitions published purporting to explain it, is an elusive abstraction. This work aims to reduce the abstraction by identifying the variables and vocabulary needed to study the concept.

In identifying a theoretical lacuna about inter-service cooperation and attempting to fill it, this study borrows from the approach William Martel took toward describing military victory. Following Martel's example, a study of related theory combines with examination of contemporary cases. The pre-theoretical process aims to "identify carefully and observe relationships in a field of inquiry, and subsequently to formulate organizing principles and testable theories."[70] As he enumerated, the approach offers several benefits, among them an illumination of the need for a theory and the possibility of sparking structured debate among those who influence policy. As this work explains in its discussion of case-study selection, the presence of "multiple interaction effects" makes the study of jointness amenable to process-

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[69] These elements come from Ostrom's description of a social science framework; see Elinor Ostrom, "Institutional Rational Choice: An Assessment of the Institutional Analysis and Developmental Framework," in *Theories of the Policy Process*, ed. Paul A. Sabatier (Boulder CO: Westview Press, 2007), 25.
[70] Martel, *Victory in War: Foundations of Modern Military Policy*, 5.

tracing methodology.[71] The complex world for which process-tracing's approach is appropriate

approximates the same epistemological jumble that confronts the pre-theorist of jointness. The

pursuit of a framework, however, can bring structure to the chaos, bringing about understanding

of the causes of cooperation and the reasons it fades or fails.

 Knowing why and when the military services cooperate is important because it has not yet

received rigorous treatment. Regrettably, the realm of academia demonstrates just as much

schizophrenia toward jointness as the services themselves do. Authors describing military

innovation have often belittled cooperation as the scourge of creativity—Owen Coté's argument

against military cooperation states this plainly.[72] Those who study crisis management within

organizations assume that cooperation is a good thing, however.[73] The problems facing military

organizations involve characteristics examined in the subject areas of military innovation and

crisis management. Hence, a multi-disciplinary approach may prove useful in examining

jointness. The examination also begs definition of the terms that inform jointness and questions

exactly when military cooperation is desirable and when it runs counter to objectives of national

security. This is no small question; it speaks to the fundamental ontology of jointness. A brief

Hegelian dialectic emphasizes the point.

> Thesis: "Jointness is desirable—it permits effective application of military power to address
> national security issues."

> Antithesis: "Jointness is undesirable—it stifles the competition and creativity needed to develop
> effective military power in the face of shifting and developing threats to national security."

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[71] See Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences*
BCSIA Studies in International Security (Cambridge: The MIT Press, 2005), 206.
[72] Coté attributed "causal significance to interservice competition as a source of innovative military doctrine;" Owen
R. Coté, "The Politics of Innovative Military Doctrine: The U.S. Navy and Fleet Ballistic Missiles" (Doctoral thesis,
Massachusetts Institute of Technology, 1996), 338.
[73] With respect to organizational cooperation in crisis, see Svedin, *Organizational Cooperation in Crises*, 12n.
Rafael Biermann argues that inter-organizational cooperation among security organizations in Europe is much more
frequent than in the past (albeit unnoticed by international relations scholars) and produces positive security
outcomes; Rafael Biermann, "Towards a Theory of Inter-Organizational Networking: The Euro-Atlantic Security
Institutions Interacting," *Review of International Organizations*, no. 3 (2008): 152-53.

The synthesis that completes the dialectic is assuredly complex; disciplined study of military cooperation offers hope that those who need it in the discharge of official duties can have an intellectual platform from which to start their endeavor.

Jointness also warrants rigorous examination because various uses of the term threaten to warp its meaning. The dialectic above takes liberty with dueling pseudo-definitions of jointness. In most military doctrine and legislation, jointness refers to the effective use of combined arms on the battlefield through interoperability and command-and-control structures. These facets of meaning are usually uncontroversial when set before any military or legislative audience. However, as Ehrhard describes, the term "jointness" also began to serve as a surrogate for the "commonality" pushed in the McNamara Defense Department after the latter term lost its luster in the wake of failed acquisitions programs like the TFX aircraft.[74] This gives jointness a meaning in the rarefied world of military acquisition that is quite controversial. Several interviews conducted for this study demonstrated that senior military leaders who vigorously agree all services should have interoperable equipment, thereby enabling effective battlefield command and control, might also vehemently oppose military acquisitions based on platform commonality.

Explanations for such behavior might seem obvious, particularly to those who are familiar with the services' roles to equip their respective fighting forces and the budgetary prerogatives and responsibilities that come with that role. One of Ehrhard's conclusions about the success or failure of UAV innovation rested on the insight that since "the only citadel the reformers did not storm was that of the services as ultimate end user" of the technology, the effort to force

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[74] "Commonality" refers to many services' use of variants of a baseline weapons system to achieve production economies of scale. See Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 389n.

centralized acquisition failed, as it has time and again.[75] Ehrhard decried forcing centralized acquisition on the services because it is anathema to their roles as buyers, testers, and battlefield integrators of new military technology—executive pressure from the Defense Department has "diffused" service enthusiasm and the advocacy needed to overcome natural bureaucratic resistance to new technologies.[76] Describing a failed mechanism to force 'jointness' does not reduce the urgency of the problem, though. There is a *prima facie* connection between the equipment services buy and their ability to interact successfully on the battlefield. Hence, the complexities of interaction among the military services, the Department of Defense, Congress, and industry must inform any comprehensive look at jointness.

A pre-theory of jointness would guide scholars and government leaders alike. It would help relate the structure of the defense establishment to the preferences and beliefs of the organizations that populate it. Furthermore, it would relate the pursuit of efficacy and efficiency through inter-service cooperation to this structural-cultural context. As Martel argued about 'victory,' if opportunities for jointness are evaluated according to a coherent set of variables, "scholarship on war will be more analytically rigorous and informative."[77] Makers of policy may start to see trends in the success or failure of joint cooperation, and their policies might improve as the pursuit of jointness moves from one of autocratic dictation to informed adjustment. Services, the joint staff, and the exogenous defense establishment in turn could transition from a Pollyannaish hope in the good of jointness to an informed view of the politics that enable some kinds but doom other sorts of joint projects.

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[75] The "reformers" in this case were those in the Office of the Secretary of Defense who in 1993, with congressional support, established the Defense Airborne Reconnaissance Office, "one of the most substantial civilian incursions into major military system acquisition management since the establishment of the National Reconnaissance Office (NRO) in 1961; ibid., 497-98.
[76] Ibid., 622.
[77] Martel, *Victory in War: Foundations of Modern Military Policy*, 92.

Motivation: A contemporary initiative provides a final point of motivation for pursuing ideas about military cooperation. Senior defense leaders, led by the Air Force and the Navy, today are promoting an operational concept that has far-reaching aims to improve interoperability, enhance command-and-control systems, and drive effective acquisitions processes. Called "Air-Sea Battle," the program name evokes the Army-Air Force endeavor of the 1980s called AirLand Battle, which became an example of broad inter-service cooperation and is one of the case-study histories this work examines.[78] In many ways, AirLand Battle was the organizing concept for force structure, control mechanisms, and military resources with which the United States successfully prosecuted Operation Desert Storm in the 1990s (see Chapter 3).

Air-Sea Battle presents itself as a 'joint' concept. The pre-theory this work sets forth serves as a preliminary framework to determine if the conditions are right for the success of Air-Sea Battle as a broad, unifying concept. Where the conditions are not ideal, the research offers suggestions for mitigating difficulty and improving means of implementation. However, Air-Sea Battle is not the only motivation for the study. A practitioner trying to influence or understand cooperation at any level of the military bureaucracy can benefit from improved understanding of the relevant organizational dynamics. Indeed, understanding whether bureaucratic battles make the possibility of battlefield effectiveness more or less likely should be one of the questions a pre-theory of joint cooperation begins to answer. With this hope in mind, the next section discusses the scheme of organization for this dissertation.

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[78] Congressman Randy Forbes pointed out the nominal similarities at a hearing he convened on the Air-Sea Battle concept in 2013. He stated, "But the second thing is if you could address for us, I think part of this confusion we have is in the name. When you look at AirSea Battle, it is remarkably like [the] AirLand Battle concept. And AirLand Battle was, I believe, a strategy, but AirSea Battle…is a concept;" U.S. House of Representatives, Committee on Armed Services, *Hearing on Air and Sea Battle Strategy, Governance, and Policy*, 113th Congress, 1st session, 10 October 2013, 6. While Forbes' word choice probably mangled any sense of meaning the original authors of AirLand Battle would have ascribed to its relationship to either "concept" or "strategy," the statement as a whole is a perfect illustration of both the malleability of military terminology as well as the confusion about the esoterically named concepts that periodically emerge from the Pentagon to great fanfare on Capitol Hill, in defense contractors' offices, and in media reports.

III. Scheme of Organization

Chapter 2: With the research question defined and its importance established, Chapter 2 tackles

the first phase of the research project by surveying several theoretical approaches applicable to

organizational cooperation in general and interactions of the military services in particular. The

intent is to establish an appreciation of elements that might be relevant to organizational

cooperation among military services, which is as yet ill defined. Having surveyed the theory, the

chapter then introduces the relevant case studies and describes the research methodologies used

to select and examine them. The second chapter closes by highlighting some preliminary

thoughts about how elements of the established theories examined might come together to form a

pre-theory of military jointness. Since the second chapter focuses on areas of academic study

likely to inform a pre-theory of jointness, it intends to generate multi-disciplinary questions that

establish a nexus within jointness.

    Chapters 3, 4, and 5: These three chapters comprise the case studies. Their format is

parallel as follows:

      A) Describe an area in which two or more military services exhibited jointness, i.e., they
          cooperated in an effort with apparent mutual surrender of institutional resources or
          ideals. The opening sections of each chapter explain any jargon or technical details
          necessary to understand the cooperative area and provide some historical context of
          service cooperation prior to the example.

      B) Examine the cooperative effort in some detail, with attention to the ideas, structures,
          relationships, and technology that made cooperation possible or inhibited it. These
          sections aim to follow Alexander George's *process-tracing* methodology, specifically
          borrowing from its *detailed-narrative* subset. Rationale for using this method appears
          later in this chapter.

      C) Briefly summarize how history demonstrates mechanisms for cooperation, conflict, or
          independent effort. These sections begin to relate the events observed to theoretical
          elements described in Chapter 2. These chapter sections, by more closely focusing the
          narrative on theory, follow the *general-explanation* subset of George's process tracing.
          Where applicable, these sections divide the cooperative mechanisms among the
          endogenous, meso-organizational, and exogenous organizational levels of analysis. For
          example, each service has an internal history and set of organizational dynamics

(endogenous). Each also provides forces to Combatant Commanders—including the commanders themselves—and works to staff, advise, and work within the recommendations of the Joint Staff (meso-organizational). Finally, the military services answer individually and as a group to the Secretary of Defense and the Department of Defense (DoD), which in turn must function in a security environment influenced by domestic and international politics (exogenous). The final sections of each case-study chapter attempt to tie observations about joint cooperation back to disparate theoretical roots. Additional observations about jointness, unidentified in the original set of theoretical questions, emerge from the case-study observations and become material for constructing a pre-theory.[79]

Chapter 6: The penultimate chapter draws together the observations arising from the generalized explanations in the case-study chapters. The chapter begins by tying the repeated themes and behaviors from historical narrative to the established theories of Chapter 2 and the behaviors observed from the historical studies. With the building blocks of theory quarried and intended case studies unsheathed, this chapter offers some discussion as to how the pieces could come together in the primordial stew of pre-theory. Harry Eckstein described the tasks of pre-theory as *delimitation* (setting out a subject's boundaries), *analysis and classification* (breaking a subject apart into its components), and *problemation* (creating problems that lead to theory).[80]

Since Chapter 2 establishes that many applicable general and military-specific theories impact the problem of jointness, Chapter 6 shows how the multiple theories coalesce into general parameters that provide descriptive power for explaining jointness. In drawing preliminary

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[79] This tripartite division of the defense establishment considers the backgrounds and perspectives of its constituent parts. Whereas Robert Art considered the services, the Joint Chiefs of Staff, the Secretary of Defense, the Office of the Secretary of Defense, and the defense "superagencies" as "the Department of Defense," this investigation recognizes descriptive value in finer gradations. The services, our 'endogenous' level, are heavily steeped in their own unique cultures and dogma. The members of the Joint Chiefs of Staff have a significant time investment in, and are heavily influenced by, their sponsoring services. There is thus a utility in having a meso-organizational level that includes the Joint Chiefs of Staff, the Chairman, and Vice Chairman, and the joint combatant commanders, who all exhibit these backgrounds and, arguably, dual loyalties; see Art, *The TFX Decision: McNamara and the Military*, 161n. On the other hand, leaders of the 'exogenous' strata of the defense establishment generally come from the civilian world (or to the degree that they have military service, they take the position after a significant amount of time has transpired since they last served in uniform). They thus more closely resemble the members of the executive or legislative branches, and are better considered as part of this group.

[80] Harry Eckstein, "Introduction: Toward the Theoretical Study of Internal War," in *Internal War: Problems and Approaches*, ed. Harry Eckstein (New York: The Free Press, 1964). See also a summary in Ted Robert Gurr, *Why Men Rebel* 40th anniversary ed. (Boulder: Paradigm Publishers, 2010), 17n.

conclusions about a jointness pre-theory, the work is careful to keep in mind that small-*n* case

studies of complex phenomena are prone to equifinality—the concept that more than one

explanatory path accommodates an observed phenomenon. Defining multiple parameters allows

some reduction and simplification, at the same time avoiding a premature insistence on

coalescence. In allowing that jointness can emerge across a wide set of values for each parameter,

it acknowledges the equifinality that inheres in a concept of such abstraction and complexity.

The work of pre-theory is necessarily iterative, and the primary goal of this chapter is to provide

jumping-off points for further study, discussion, and debate of useful jointness. After proposing

the structural variables for a pre-theory of jointness, the chapter concludes by offering a working

definition of the term that attempts to capture realistic shades of its defense-establishment

meaning while stripping it of some of the ungrounded wishful thinking that plagues its usage as a

military term of art.

 Chapter 7: The concluding chapter offers conclusions about jointness that appear

repeatedly in the case studies and pre-theoretical assemblage of Chapter 6. It offers several of the

insights shared by the nearly sixty defense-establishment leaders interviewed as primary sources

for case-study research. Since these individuals spent careers in the arena where the pursuit of

jointness in military endeavors occurs, their views round out the historical process-tracing and

theoretical facets of the study. Their observations show how those involved in the defense

establishment view jointness as a practical matter, and shed some insight on why the definition

and pursuit of jointness prove so elusive. The final chapter is by no means the final word about

jointness, but rather summarizes some of the most compelling considerations unearthed in this

pre-theoretical investigation. Using these conclusions, the work makes some predictions about

the chances for success of Air-Sea Battle, one of the latest joint initiatives to emerge from the

Pentagon.

DISCUSSION OF RELEVANT THEORY AND CASE-STUDY SELECTION

I. Relevant Theory

This dissertation relates interdisciplinary theories to cases of military organizations attempting to solve security problems. The well available to draw from includes two types of work. The first are *theories that explain organizations exhibiting cooperative behaviors*, especially where these organizations exhibit characteristics similar to the military. The second are *theories about military organizations that deal with behaviors other than cooperation*. Direct application of any single theory may fail to provide explanatory power, but the interdisciplinary approach may reveal systematic observations about cooperative organizational dynamics among the military services. This work presents an opportunity to refine organizational-cooperation theory as it applies to the military, and it offers a means for a better understanding of national security issues that involve multiple groups. It should reveal ties among well-studied aspects of military organizational behavior and the way they relate to cooperative behavior within the military establishment. Following William Martel's similar effort to define and explain the parameters of 'victory,' this study uses systematic observations about existing theories and their relation to inter-service cooperation. In so doing, it creates a framework for a phenomenon around which ideas from many varied disciplines orbit, but for which no formal theoretical framework yet exists.[81]

To gather bricks and mortar for building such a pre-theory, this section summarizes ideas from several disciplines that might provide useful contributions to a theory of military cooperation. As Suzanne Joseph described, at this early theoretical stage "the

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[81] Martel, *Victory in War: Foundations of Modern Military Policy*, 6-7.

emphasis is on the addition of components."[82] For each discipline, a summary shows how the theory has potential application to inter-service cooperation.

This section first discusses theories that apply to organizations in general. It next deals with observations of military behavior other than cooperation *per se*, but whose mechanisms and explanations may contribute to our understanding of military cooperation. Many of the bodies of theory this section describes are vast; in-depth description of derivative ideas is impracticable. This section attempts to draw out several relevant theoretical concepts. If a prevailing dyad of conflicting ideas characterizes a given field, the discussion emphasizes their differences and considers both in parallel with respect to jointness.

A. General Theories Influencing Organizational Cooperation

The first source of relevant theory comes from disciplines that have described group interactions in general without examining military organizations in particular. Several social science disciplines have made contributions to understanding cooperative group behaviors. Outlines of these theories, which range across a spectrum from rationalist to postmodernist,[83] can inform a theory that explains the nature of inter-service cooperation. These theories also appear in derivative literature as the building blocks for theories about military-specific behaviors discussed in the following section. This list begins by hearkening to basic economic theory and its impact on group behaviors.

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[82] Suzanne Joseph, "Anthropological Evolutionary Ecology: A Critique," *Journal of Ecological Anthropology* 4(2000): 6-7.

[83] The use of "post-modernist" here is in the philosophical sense: marked by skepticism toward the ideas of rationalism, objective reality, and objective truth.

1. Public Goods and Political Groups

Mancur Olson showed why large groups working to produce a public good that benefits group members never optimize the output of that good.[84] He further demonstrated why the desires of a rational individual would rarely drive that person to belong to an interest group that furthers those aims.[85] According to Olson, the two factors preventing beneficial collective action in large groups are the free-rider problem and the problem of imperceptible contributions.[86] He proposed remedies to both problems. In small groups, social pressure can force participation and contributions where the mere shared interest of the public good does not suffice. Groups can also elect to provide conditional benefits in ways that force otherwise unmotivated participants to make a contribution lest they not partake in the benefits the group secures.

James Wilson challenged Olson's insistence that social pressure and conditional benefits alone can remedy the problems of group-collective action; he posited that appeals to purpose could overcome the inertia of rational self-interest assumed by economists.[87] Wilson explained the rise of pluralistic factions and the observed American reality that while people belong to ever-more interest groups that provide them a

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[84] Olson's proof is based on groups being large, though he shows how small groups will tend to further collective interests toward a theoretical maximum if each member of the group has a significant and visible share of the benefit. In this study's sample of *four military services* or the *large military complex*, discussion about the relative size of the group is important, and probably relies in part on whether services are monolithic decision-making organizations or more fractious entities. For now, Olson's non-technical summary suffices: "In short, the larger the group, the less it will further its interests." Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge: Harvard University Press, 1971), 33-36.

[85] Ibid., 64-65.

[86] A free rider is someone who benefits from a public good without making a contribution to its creation. The imperceptible-contributions problem arises because a lone individual is unable to make a contribution that is significant enough to advance a collective's cause—Olson's analogy is a man trying to stop a flood with a bucket; such an individual would be deemed insane rather helpful even though his intentions were good; ibid., 64.

[87] James Q. Wilson, *Political Organizations* 1995 Princeton University Press paperback ed. (New York: Basic Books, 1974).

lobbyist's voice, they feel less represented within society.[88] He highlighted the increasing difficulty of cobbling together consensus among clamoring interest-group communications, much of which are infused with hyperbole designed to induce panic. Wilson's observation—that the threat of losing something a group has attained so overcomes any promise of getting something it wants—makes the dynamic between fear of loss and potential gain a topic with obvious relevance to discussion about inter-service rivalry.[89]

Whether the arena of joint action is a small group of just a few services or a sea of thousands of self-interested actors is debatable, but Olson's theory predicts that military services may not advance the pursuit of security even though public good is their chief pursuit. One should expect some difference between the best possible and actual observed outcomes of any group endeavor; joint military action is no exception. Where cooperation toward a shared goal does arise, it might be a result of social pressure or conditional benefits—both mechanisms rely on a coercive element.[90] However, this study also looks for evidence that Wilson's appeal to purpose plays into joint cooperation. But even if, as Wilson showed, voluntary formal associations do arise in violation of the public-goods paradox Olson highlighted, his analysis predicts a cacophony of clamoring voices in the defense establishment and frequent gridlock. The visible presence of all these elements in inter-service relations indicates the relevance of these theories. The questions derived from these competing views of public-goods theory are, "Do the

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[88] Ibid., xxii.
[89] Ibid., x.
[90] This work uses "coercion" according to Schelling's construct, which defined a negative ("deterrence") element and a positive ("compellence") element. The threat of sanction or criticism would constitute deterrence. The reduction of a service's budget or cancellation of favored programs until it complied with sister-service or DoD priorities would constitute compellence; see Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), 69-72.

military services sometimes act as free riders in the production of security?" and, if so,

"Do military organizations need to be goaded through public pressure to reach jointness,

or will they seek it with sufficient appeal to purpose?"

2. Organization Theory
Graham Allison and Philip Zelikow devised a widely used model of organizational

dynamics by defining three competing models of behavior. Their "rational actor," making

logical decisions based on utilitarian analysis, vies with the bureaucratic inertia of an

organization trying to survive for its own sake and the "pulling and hauling" of self-

interested individuals trying to further their own interests in the context of a decision

situation.[91] Robert Axelrod and Robert Keohane's explanation for cooperation among

organizations not controlled by a superior governing body underpins the rational-actor

model. They concluded that the likelihood of cooperation varies with mutual interests, the

need for the organizations in question to cooperate in the future, and the number of

organizations involved (difficulties in cooperation increase with more participants); they

also noticed a consistent tendency of the actors involved to alter the nature of the "game"

in which they were participating.[92] From this aspect of organization theory, this work

asks, "How do first-order threats, bureaucratic politics, and political maneuvering

influence jointness?"

In the realm of bureaucratic politics (Allison's Model II), Irving Janis' discussion

of groupthink offered an explanation for bad decisions widely adopted by an organization.

He also surmised that an in-group's derision of a competing out-group is a psychological

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[91] Allison and Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 4-5.
[92] Robert Axelrod and Robert O. Keohane, "Achieving Cooperation Under Anarchy: Strategies and Institutions," *World Politics* 38, no. 1 (1985): 248-49.

outlet for the "latent jealousies and antagonisms" that arise within the in-group.[93] Robert

Jervis' discussion of cognitive dissonance in international politics concluded that "people

must often rearrange their perceptions, evaluations and opinions" to convince themselves

of the value of the course of action they pursued when confronted with evidence of what

might have otherwise happened.[94] Jeffrey Polzer further discussed the in-group and out-

group roles that emerge in organizational cooperation when individuals, subgroups, and

collectives have conflicting goals. He found that subgroup identification suborned the

collective's goals in cooperative efforts, both when competing subgroups are from

different organizations and when a subgroup within an organization has a competitive

reputation.[95] The location of in-group and out-group boundaries, the differentiation

among subgroups, and the reputation of subgroups informed this work, and may be key to

understanding cooperation among the military services. The question it inspires is "How

do service subgroup interests increase or diminish the likelihood of joint cooperation?"

To explain cooperation among organizations, the body of organizational theory

typically resorts to resource dependence, arguing a mutual need for shared capabilities in

resource-constrained environments.[96] Applied to the question of military jointness, this

line of thinking suggests cooperation among services when both have a mutual need for

the capabilities the others offer. In the context of major conflicts, this is certainly evident.

The most compelling evidence available comes from large combined-arms efforts that

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[93] Irving L. Janis, *Groupthink: Psychological Studies of Policy Decisions and Fiascoes* Second ed. (Boston: Houghton Mifflin Company, 1982), 257.

[94] Robert Jervis, *Perception and Misperception in International Politics* (Princeton, N.J.: Princeton University Press, 1976), 406.

[95] Jeffrey T. Polzer, "How Subgroup Interests and Reputations Moderate the Effect of Organizational Identification on Cooperation," *Journal of Management* 30, no. 1 (2004).

[96] See, e.g. Richard M. Emerson, "Power-Dependence Relations," *Americal Sociological Review* 27, no. 1 (1962): 32; Ephraim Yuchtman and Stanley E. Seashore, "A System Resource Approach to Organizational Effectiveness," *Americal Sociological Review* 32, no. 6 (1967): 891.

rely on all branches performing well in their respective domains to ensure the success of others. Where resource availability overlaps—or when services feel they can "go it alone"—the impetus for successful cooperation is missing. This theory alone offers a complete explanation for general patterns of joint cooperation and inter-service rivalry, making it essential for the theoretical repertoire of this study. The question pertinent to jointness is, "Do overlapping service capabilities advance or hinder jointness?"[97]

The body of organizational theory is vast, and plumbing its depths would overwhelm this work, but a third subset merits mention in establishing elements that might inform a pre-theory of joint military cooperation. It is the branch of the discipline that examines specifically organizations experiencing a crisis.

3. Crisis Organizational Cooperation Theory
One subset of organizational cooperation theory seems to have special utility in assembling a pre-theory of inter-service cooperation. Lina Svedin performed statistical analysis of major observed behavioral patterns and distinct cooperation strategies found in organizations dealing with a crisis.[98] The analysis of linked variables showed explicit connections among behaviors and strategies, and how the behaviors and strategies vary among five distinct types of crisis.[99] Svedin's data set comprised a wide variety of crisis situations that affect many different types of military, non-military governmental, and private organizations.

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[97] As the work progressed, and in particular during investigating the second case study about the Joint Primary Aviation Training System (JPATS), the notion of a socially constructed cooperative effort arose, leading to an additional question, "Who works to create stable cooperative structures?" For essays that discuss the relevant form of social constructivism in general, see Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch, eds., *The Social Construction of Technological Systems* (Cambridge MA: The MIT Press, 1987).
[98] Svedin, *Organizational Cooperation in Crises*.
[99] Ibid., 93.

Svedin's taxonomy described five types of crises, five types of organizational behavior, and four types of cooperative strategies that organizations in crisis may use in their interactions. The *five types of crises* are: 1) unclear threat(s), 2) unclear threat(s) that persist over time, 3) threats from within a crisis-management group, 4) threat from outside a crisis-management group, and 5) uncertainty about the definition of a crisis. The *five types of observed organizational behavior* are: 1) fighting, 2) agreement, 3) talking, 4) negotiation, and 5) manipulation. The *four available cooperative strategies* are: 1) bureaucratic politics, 2) concurrence seeking, 3) signaling trustworthiness, and 4) success-based helping.

In analyzing the statistical dependence of these three observed characteristics from a wide sample of case studies, organizational cooperation theory offers predictive analyses of the overall cooperation climate that will emerge based on a combination of crisis type, behaviors, and strategy. Knowing one or more of these factors, a practitioner can 'solve' for remaining unknowns or act to mitigate harmful anti-cooperative conditions. For example, a crisis characterized by unclear threats over a short time horizon is likely to be typified by open fighting among organizations in decision situations, but organizations facing a persistent unclear threat over a long time horizon are more likely to pursue a cooperative strategy of success-based helping. Organizations that perceive a threat from within are likely to resort to a strategy of bureaucratic politics but avoid open fighting. Organizational culture and preference are inextricable from this discussion and play important roles at two levels of analysis. The first level of analysis is what social psychologists call the 'decision-situation,' which describes how organizations and their representatives behave at discrete interaction opportunities. The second level of

analysis is strategic; it refers to the overarching preference over the life of a crisis, project, or institution and comprises many decision-situation events.

By way of example, organizations that fight as a predominant means of interaction are likely to use a cooperative strategy called "signaling trustworthiness;" paradoxically, their open hostility leads over time to sincere communication about intent. In contrast, organizations that favor talking are more likely to use a strategy of bureaucratic politics; civility in communications belies intentions to obfuscate.[100] Using these and other identified combinations, process-tracing that reveals any pair of threat type, behavior pattern, or crisis coping strategy can reveal the 'missing' element. Since service behaviors are well known or easily observed, this subset of theory becomes a useful tool for explaining organizational response in a crisis.

Crisis-based organizational cooperation theory offers multiple potential bases for case-study analysis. Using the taxonomy of crisis types, behaviors, and coping strategies of the kind outlined by Svedin offers a new means to analyze the mechanics of military cooperation as it occurs in a crisis context. An overarching appeal of organizational-cooperation theory as a discipline is that it places the research question in the realm of economic theory and experimental behavioral science, including studies of group behavior with large-*n* samples and rigorously testable hypotheses. Expanding the aperture to examine cooperation while re-examining the conclusions drawn by students of doctrinal innovation in the light of a new academic discipline offers additional nuance to the study of the interaction of military organizations.

The decision to apply a crisis-based theory deserves scrutiny. Given some of the characteristics of the selected case studies, some of which unfold over several years, an

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[100] See ibid., 131-34.

observer could argue that the time span alone suggests the term 'crisis' is misplaced. However, definitions of crisis in the literature suggest that uncertainty and threats to organizational values are as important as a short time span. A commonly used definition of "crisis" is "a serious threat to the basic structures of the fundamental values and norms of a social system, which—under time pressure and highly uncertain circumstances—necessitates making critical decisions."[101]

An applicable example outside the military realm are HIV/AIDS infections that probably first appeared in the U.S. in 1969 and that the medical community recognized as a unique epidemic by 1981.[102] Popular media labeled the AIDS epidemic a 'crisis' soon after its recognition. This usage demonstrates that a problem that unfolds over a relatively long period of time can indeed be a crisis, and the label is as valid for HIV/AIDS as it is for an event as brief as the explosion of the Challenger space shuttle.[103]

The case studies in this work all unfold over time frames on the order of a decade, but all three cases exhibit uncertainty and time pressure. Arguably, all but the most routine decisions facing a military organization and the national security establishment share these characteristics. Perhaps more useful for application of the conclusions these case studies suggest is that they unfold over similar time horizons, making them internally consistent. The pertinent questions about jointness this line of theory yields are, "Do military services make decisions about jointness in a crisis context?" and "How does the perceived urgency of a dilemma affect decision and cooperation mechanisms?" The

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[101] Original in Uriel Rosenthal, "Crisis Decision Making in the Netherlands," *Netherlands' Journal of Sociology* 22, no. 2 (1986).Quoted in Uriel Rosenthal, Michael T. Charles, and Paul 't Hart, "Introduction: The World of Crises and Crisis Management," in *Coping with Crises: The Management of Disasters, Riots and Terrorism*, ed. Uriel Rosenthal, Michael T. Charles, and Paul 't Hart (Springfield: Charles C. Thomas, 1989), 10.

[102] M. Thomas P. Gilbert et al., "The Emergence of HIV/AIDS in the Americas and Beyond," *Proceedings of the National Academy of Sciences of the United States of America* 104, no. 47 (2007): 18566.

[103] Rosenthal, Charles, and 't Hart, "Introduction: The World of Crises and Crisis Management," 4.

question considers common organizational behaviors and cooperative strategies in context.

4. Theory of Professions

Alexis de Tocqueville, Samuel Huntington, and Morris Janowitz, among others, have described the military as a profession in significant scholarly works.[104] Borrowing Huntington's formulation of expertise, responsibility, and corporateness, the military services describe themselves as comprising a *profession of arms*.[105] Various military schools teach that the military has certain structural characteristics including entry barriers, educational requirements, ongoing education, ethics codes, and the like that afford it the distinction of being a profession rather than a vocation. The extent to which these elements pervade the military are contestable, but asserting this type of military professionalism assumes a military homogeneity that explains neither inter-service rivalry nor a tendency to cooperate. A more useful discussion of professional organizations and how they might influence inter-service cooperation comes from Andrew Abbott, who wrote, "Control of knowledge and its application means dominating outsiders who attack that control."[106] He put forth a definition tied to control of the work done and a claim to the abstract knowledge necessary in the event.

Abbott's alternate definition *is* potentially helpful in illuminating inter-service behavior. The story of inter-service conflict is often one of argument over "roles and missions," explicit definitions of the precise type of work that a military service is

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[104] Alexis De Tocqueville, *Democracy in America*, trans. Henry Reeve, iBooks ed., 2 vols., vol. 1, (Digitally Published: Public Domain, 1835); Huntington, *The Soldier and the State*; Morris Janowitz, *The Professional Soldier: A Social and Political Portrait* (Glencoe: Free Press, 1960).
[105] See, e.g., Combined Arms Center TRADOC, *Army: Profession of Arms 2011—The Profession After 10 Years of Persistent Conflict* (Blackwell OK: Schatz Publishing Group, 2010). Martin E. Dempsey (America's Military - A Profession of Arms), Chairman of the Joint Chiefs of Staff White Paper, 2012.
[106] Andrew D. Abbott, *The System of Professions: An Essay on the Division of Expert Labor* (Chicago: The University of Chicago Press, 1988), 2.

supposed to do—and that the other services must eschew.[107] "It is the control of work that

brings the professions into conflict with each other and makes their histories

interdependent," says Abbott, and his observation would seem to apply directly to the

military services that have made a habit of arguing about the kinds of work they

perform.[108] Historical arguments about coastal defense, amphibious operations, and the

enduring debate about the various applications of air power highlight conflict based on

largely untested abstract assertions. For example, an Army-Navy agreement from 1931

reads in part, "the navy should have no part in coastal defense."[109] Military missions are

the essential work of the military, and the justifications put forward to defend service-

specific positions are abstract knowledge in the form of doctrinal (or dogmatic) military

preferences.

Abbott went further in his observation that, while technology may spur the creation

of new professions, it is not the final arbiter. Again addressing military air power

applications, he noted that the Air Force achieved independence "only after an internal

battle of several decades, and it lost a similar fight with the Navy."[110] As Jeffrey

Donnithorne related, the assumption by the Air Force that the best use of air power comes

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[107] See, e.g., Warren A. Trest, *Air Force Roles and Missions: A History* (Washington: Air Force History and Museums Program, 1998), ix-xii.

[108] Abbott, *The System of Professions*, 19.

[109] The agreement between then Army Chief of Staff General Douglas MacArthur and Chief of Naval Operations Admiral William Pratt read, "The Naval Air Force will be based on the fleet and move with it as an important element in solving the primary missions confronting the fleet. The Army Air Forces will be land-based and employed as an essential element to the Army in the performance of its mission to defend the coasts at home and in our overseas possessions, thus assuring the fleet absolute freedom of action without any responsibility for coast defense; see MacArthur-Pratt Agreement; IRIS No. 123080; Air Force Historical Research Agency, Maxwell AFB.

[110] Despite the formal independence of the Air Force established in 1947, it has never had complete control of all air assets. Naval aviation has remained independent (albeit with contention about its 'proper' military use), while the Army immediately began developing a helicopter force despite the Air Force's pre-independence promises to dedicate air support to the Army; see Richard G. Davis, *The 31 Initiatives: A Study in Air Force-Army Cooperation* (Washington: Office of Air Force History, 1987), 2. The quotation is from Abbott, *The System of Professions*, 92.

when air forces are independent from ground forces begs constant re-statement and intellectual defense.[111] Since there is no obvious reason for such a claim, it is by definition a bid for power through an abstract ideal. The nature of the Air Force's claim on the 'work' it does explains both its advocates' appeals to emotion and its enduring institutional insecurities. Abbott describes how professions rise and fall as "tasks are created, abolished, or reshaped by external forces."[112] Competing preferences for close, tactical, organic control of the air arm over the Air Force preference for wide, strategic, centralized direction would predict a strong institutional reaction. The reaction would be even stronger when the Air Force is not held in as high esteem compared to the other services because, as Abbott describes, the primacy of one profession over another is formed via courts and legislation, the public arena, and the workplace.[113] The question raised by this line of reasoning is identical to one raised in considering resource constraints in the context of organization theory: "Do overlapping service capabilities advance or hinder jointness?"

Finally, Abbott's idea about how groups coalesce and dissolve from existing professional groups and aspirants speaks to a phenomenon noted in military services that identify closely with a certain specific competency. The energy required to create a new subclass within a profession invokes Stephen Rosen's description of the resources a military organization must invest to provide a legitimate means of promotion for the practitioners of a new military innovation.[114] The question it inspires is "Do subclasses

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[111] Donnithorne, "Principled Agents," 227-28. The same is true for the Marine Corps' independence from the Army, according to Wray R. Johnson (Instructor, U.S. Marine Corps School of Advanced Warfighting), personal interview with the author, 5 December 2013.
[112] Abbott, *The System of Professions*, 33.
[113] Ibid., 62-65.
[114] See ibid., 174-75.

vying for recognition in their respective military services offer a mechanism for joint cooperation?"

5. Agency Theory
Agency theory attained its shape in formal academic literature with Michael Jensen and William Meckling's description in 1976.[115] The *principal-agent dilemma* is a gap that exists between the intent of people who design and mandate policy (principals) and the people charged with implementation of that policy (agents). Kathleen Eisenhardt's survey of agency theory found that it enjoyed widespread application across many academic disciplines and that it contributes to organizational theory with appreciable explanatory power.[116] Agency theory best contributes to modeling an organization's strategic choices if it accounts for both the context of decisions and the actors' (principals' and agents') preferences.[117] Since the military establishment is by design a hierarchical one and delegation of authority is necessary for its function, it is prone to frequent exhibitions of

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[115] See their definition of an *agency relationship* as an arrangement "under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. If both parties to the relationship are utility maximizers, there is good reason to believe that the agent will not always act in the best interests of the principal;" Michael C. Jensen, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics* 3, no. 4 (1976): 5. See also Michael C. Jensen and William H. Meckling, "The Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure," in *The Theory of the Firm: Critical Perspectives on Business and Management*, ed. Nicolai J. Foss (New York: Routledge, 1976).

[116] Kathleen M. Eisenhardt, "Agency Theory: An Assessment and Review," *The Academy of Management Review* 14, no. 1 (1989): 57.

[117] Sun-Ki Chai, "Rational Choice and Culture: Clashing Perspective or Complementary Modes of Analysis?," in *Culture Matters: Essays in Honor of Aaron Wildavsky*, ed. Richard Ellis and Michael Thompson (Boulder: Westview Press, 1997), 55-56; Jeffry A. Frieden, "Actors and Preferences in International Relations," in *Strategic Choice and International Relations*, ed. David A. Lake and Robert Powell (Princeton: Princeton University Press, 1999), 75-76; Jeffrey Legro, "Culture and Preferences in the International Cooperation Two-Step," *The American Political Science Review* 90, no. 1 (1996): 118; Daniel L. Nielson, Michael J. Tierney, and Catherine E. Weaver, "Bridging the Rationalist-Constructivist Divide: Re-Engineering the Culture of the World Bank," *Journal of International Relations and Development* 9, no. 2 (2006): 130-32.

the principal agent-dilemma, and consideration of the impact of this theory must go into any theoretical effort to describe joint behavior.[118]

As with other social sciences theory, the study of the military has served as a source of inspiration for some scholars to test and refine agency theory. This study incorporates the work of Peter Feaver, Jeff Donnithorne, and Monte Cannon into its analysis of jointness. Each of these authors used aspects of agency theory to explain the behavior of military organizations. Donnithorne built upon Feaver's formulation of civil-military relations as a principal-agent problem; both posit that civil authority is the principal that contracts with a military agent to provide security for the state. This establishes interests and information for the military that are asymmetric with those held by and available to the state. The military's behavior is a function of its interests, the level of monitoring the state gives it, and its expected punishment for behaviors that advance its interests counter to those of the state.[119]

Donnithorne refined Feaver's work by appreciating that the civilian principal is not a unitary actor; the military can and does get instructions from multiple civilian branches of government. As Deborah Avant wrote, "military agents can choose the direction that best suits their interests, or they can play the two off against one another to generate a policy more to the military's liking."[120] Donnithorne also incorporated Jeffrey Legro's observations into his model by acknowledging the differing preferences among individual

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[118] As an example of the cross-disciplinary utility of agency theory, note that a simplistic agency theory construct of civil-military relations explains Coté's observation about information being unavailable to the civilian leaders who need it most to exercise their responsibility to create a responsive military.

[119] Donnithorne, "Principled Agents," 54.

[120] Deborah D. Avant, "Political Institutions and Military Effectiveness: Contemporary United States and United Kingdom," in *Creating Military Power: The Sources of Military Effectiveness*, ed. Risa A. Brooks and Elizabeth A. Stanley (Stanford: Stanford University Press, 2007), 82.

services.[121] Finally, he expanded the temporal scope of policy development by analyzing development and implementation as separate phases of a bifurcated process.[122] He tested his theory against four alternative civil-military theoretical explanations. Cannon posited the role of component commanders (the domain-specific chiefs of land, air, sea, marine, and special operations forces) who work for a designated joint commander as a principal-agent structure. The joint commander, in the role of principal, must delegate many of his tasks to the component agents, and the act of delegation creates "the potential for divergent aims" that sacrifice joint goals for "service imperatives."[123] For this work's pre-theoretical endeavor, the most important aspects are the differentiation of service cultures and recognition that principals, be they civilian or military, are not unitary actors—they are constrained in what they can accomplish by the structure of organizations they lead and the potential for selective obedience these create. This chapter borrows and expands on these concepts later in its discussion of theoretical concepts specific to the military, particularly with respect to civil-military relations, service-culture entailments, and defense-establishment hierarchy. For now, the question raised is, "Do the many principal-agent relationships evident in the defense establishment advance or inhibit jointness?"

B. Theories and Descriptions of Military Organizational Behavior
Moving from general theories about organizations, the focus turns next to theory from works written about military organizations. This includes existing literature that does not deal with the specifics of inter-service cooperation, but whose descriptions and explanations appear to have bearing on or relation to the cooperative tendencies exhibited among the military services.

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[121] Legro, "Culture and Preferences in the International Cooperation Two-Step," 118.
[122] Donnithorne, "Principled Agents," 62-63.
[123] Cannon, "Cleaning Up the Joint," 18 and 150.

1. Military Innovation

A large body of literature examines how innovation occurs in military organizations and how those organizations may bring about or hinder innovation. Barry Posen and Stephen Rosen are the most influential authors in this field and describe two distinct views of military innovation.[124] In Posen's construct, the careful oversight of civilians is the only way to prevent the isolation of the armed services and ensure instead that they pursue military capabilities appropriately reflective of technological advance while balancing "political ends with military means."[125] He viewed the sources of military innovation as almost exclusively exogenous to the military establishment, although alliances with "maverick" individual officers may be key to helping the outside intervention succeed.[126]

In contrast, Rosen found the sources of innovation to be internal to military organizations. He also took a more nuanced view of innovation, arguing that its nature and mechanisms changed whether wartime, peacetime, or purely technological aspects were the dominant atmospheric condition. He identified the process of peacetime innovation as slow-moving, requiring time for visionary military leaders to create new pathways for promotion along which more junior officers can carry the innovative ideas they develop.[127] He argued that wartime innovation is faster because of greater need and urgency, but otherwise the trajectories it follows are more difficult to describe. The

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[124] Though this work is about military cooperation rather than innovation in military doctrine, it will touch on doctrine to some degree. In doing so, it will rely on a definition shared by the work of Rosen, Posen, and Coté. Military doctrine is the military subcomponent of grand strategy. It answers the "What shall be employed?" and "How shall they be employed?" questions about military means, and the other authors follow suit. Military doctrines set priority among the types of forces available, prescribe organizational structure, determine force-employment guidelines, and specify modes of inter-service cooperation. See Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany Between the Wars* (Ithaca: Cornell University Press, 1984), 7.

[125] Ibid., 241.

[126] Summary from John A. Nagl, *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam* (Chicago: The University of Chicago Press, 2002), 3.

[127] Rosen, *Winning the Next War*, 105.

change it produces is fleeting, achieved at great cost, and subject to speculative gambles.[128] Successful innovation in war usually accompanies new and improved means to objectively measure strategic effects. Technological innovation is, unexpectedly, not usually a function of enemy capabilities. Instead it reflects the struggle of inventors and military personnel to manage uncertainty. These actors deal with the unknown either by pursuing a wide range of options or by purchasing better information about anticipated needs before undertaking the expense of large-scale production.[129] On all three fronts, Rosen identified endogenous sources for innovative ideas—his theory does not rely on proactive government officials auditing the misguided paths of a static military bureaucracy. Rosen underlined the difference between his theory and Posen's in critiquing the concept of "mavericks," demonstrating that such individuals are often counterproductive to the cause of innovation.[130]

Owen Coté found a *via media* between Posen and Rosen, arguing that competition between services drives innovation.[131] As with the other innovation scholars, his view of innovation balanced a Waltzian, system-level response of national leaders to external anarchic pressures against the political bargains and institutional inertia with which heads of bureaucracies concern themselves. [132, 133] Although Coté found a separate, causal source of innovation in inter-service rivalry, he also affirmed the fundamental structural-

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[128] Ibid., 179-82.
[129] Ibid., 249-50.
[130] Ibid., 12-13.
[131] Coté, "The Politics of Innovative Military Doctrine," 338.
[132] The term "Waltzian" refers to Waltz's central idea that accurate explanations of international politics center on both the interactions of individual units as well as the structure of the system in which they operate; see Kenneth N. Waltz, *Theory of International Politics* (New York: Random House, 1979), 99. Application of Waltz's ideas to systems other than the intercourse of nations retains the idea of individual actors operating in a pseudo-anarchic system.
[133] Coté, "The Politics of Innovative Military Doctrine," 332-34.

realist ideas of Posen, agreeing "national leaders hold the reins of state power."[134] There

are yet more nuances in Coté's work useful to a discussion of cooperation. He found that

intra-service and inter-service competition serves as a useful source of information that

civilian officials would not otherwise be able to access. However, the reality that civilian

intervention can stifle this information by spurring undesirable military cooperation is a

"paradoxical" threat to innovation.[135] Understanding the details of military culture or

innovation, for example, may illuminate understanding of cooperation, even though

innovation and cooperation are not the same kind of behavior—or even related.[136] The

question inspired by this theoretical area of study is, "Do the sources of military

innovation advance or hinder jointness?"

Military-innovation theory combines with cooperation theory to yield another

useful question about jointness. Dean Tjosvold described a taxonomy of organizational

cooperation, characterizing the context for cooperation as cooperative, competitive, or

independent.[137] Subsequent experimentation found that organizations that believed their

interactions happened in a cooperative environment engaged in more helping behaviors,

whereas competitive contexts led to less openness and more hostile behavior.[138] The

distinction Rosen drew among wartime, peacetime, and technological advances are

relevant to cooperation as well. The link comes from matching the cooperation taxonomy

against Rosen's three types of innovation. Wartime innovation, given a sense of urgency

and shared goals for success against a common enemy, becomes cooperative (positive)

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[134] Ibid., 395.
[135] Ibid., 389.
[136] In fact, all the authors surveyed for explanations of military innovation assume some level of inter-service rivalry to be an integral part of the creative process.
[137] Dean Tjosvold, "Cooperation Theory and Organizations," *Human Relations* 37, no. 9 (1984).
[138] "Effects of Shared Responsibility and Goal Interdependence on Controversy and Decisionmaking Between Departments," *The Journal of Social Psychology* 128, no. 1 (1988): 13.

interaction; peacetime innovation, marked by competing ideas and immediacy reflects competitive (negative) interaction; technological innovation reflects both of the above; and, due to its necessarily creative aspect, adds individualistic (independent) facets. The juxtaposition of Rosen and Tjosvold yields two questions: "Does a given security situation constitute a 'crisis' for the military establishment?" and "If so, do the crisis conditions within which military organizations operate make jointness more or less attainable?"[139]

To continue application of innovation theory, consider assumptions about the nature of military cooperation. Of the three competing theories of military innovation, none assume that military services will cooperate by default. Coté explicitly identified cooperation as a detriment to innovation in the military. However, it is important to note that Coté's informative case studies of the development of fleet ballistic missiles for the U.S. Navy took place during peacetime.[140] Had the opportunity for innovation occurred during wartime, Rosen's theory predicts that dynamics would have been different, albeit not necessarily conducive for superior innovation.[141] However, the counterfactual circumstance bears consideration, because it emphasizes the importance of context on both innovation as well as cooperation. If the dynamics of innovation change in the crisis context of war, the dynamics of cooperation may change in a crisis as well.

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[139] The question relevant to this study of jointness is similar to one yielded by consideration of organizational behavior in crises, which links many ideas and demonstrates the utility of a cross-disciplinary approach to the problem. It is particularly useful because the Tjosvold-Rosen construct predicts different results than Svedin's more specific correlations between crisis type and behavior.

[140] This is the author's assertion, and very much subject to debate. The world was not at peace throughout the time periods discussed, but there was little to no threat of thermonuclear war of the kind that ballistic missiles would have enabled. If one accepts the Cold War as "war" *per se*, the metric of launch-ready thermonuclear missiles then becomes an appropriate strategic metric.

[141] Rosen, *Winning the Next War*, 251. The blurring of "wartime" and "peacetime" perceptions that characterized the Cold War is a serious issue that merits further attention. One can argue in favor of one perception or the other and assert that given metrics of strategic success are or are not important. As the rest of this work will show, confusion or disagreement about the severity of a security situation can have significant impact on jointness.

From the study of military innovation comes another concept important to this study: pertinent levels of analysis. Military innovation scholars build their theories on *endogenous* (service-level), *meso-organizational* (inter-service), and *exogenous* (external to the services and their inter-service relationships) explanations. Using these levels of analysis, one might construe cooperation among the military services as the object of jointness. The services therefore form the correct unitary level of inspection and are considered as endogenous for the purposes of this study.[142]

The meso-organizational levels are those comprised of service actors but acting at a level above the services themselves—the Chairman of the Joint Chiefs of Staff, the Joint Staff, and the combatant commanders. The exogenous organizations—the Department of Defense, the remainder of the executive branch, Congress, industry, etc.—sit above both the services and the meso-structure to which they contribute. Per Donnithorne's approach, this study does not consider them unitary actors. Though their disparate actions may influence the services in myriad ways, a commonality of purpose is not necessary at this level for jointness; only the services need cooperate. This final aspect of military-innovation theory does not inspire a question about jointness, but the levels of analysis it describes provide a consistent structure for framing the case studies in this work.

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[142] This assertion runs counter joint doctrine. A doctrinaire (pun intended) approach to the way U.S. fighting proceeds might argue that 'service' opinions and actions are irrelevant to 'jointness' since war is waged by the meso-organizational level of the defense hierarchy (a joint force commander overseeing forces provided to him by the services). This dissertation rejects that view, finding that the service influence over those forces is too high to ignore and that parochialism does not die out even in fairly intense military action. This assertion is in line with the interviews of senior military leaders conducted for this work. It also extends Mahnken's findings about the primacy of service culture over subcultures, and is in agreement with Kenneth Allard's conclusion that, because of their "organize-train-equip" responsibilities, each "service, rather than joint, command structures exercise the dominant influence over" joint forces; see C. Kenneth Allard, *Command, Control, and the Common Defense* 1996 Revised National Defense University ed. (New Haven CT: Yale University Press, 1990), 4.

2. Civil-Military Relations

Because the body of literature about civil-military relations is large and diverse, this work builds on the distillations that Donnithorne and Feaver provided in analyzing the dynamics of civilian control over the military; they provide a sufficient palette for consideration in the case studies that follow.[143] In current scholarship, Huntington's advocacy for 'objective control' is the seminal argument for the advancement of successful civil-military relations. He advocated a form of professional separation from society and government that would allow the military to perfect the business of armed confrontation while remaining subservient and responsive to civil authority.[144] In exchange for autonomy in internal affairs, the military of Huntington's ideal pledges apolitical obedience.

Janowitz' answer to Huntington concerned itself with a perceived unsustainable gap between military and civilian culture and norms. Rather than relying separation to professionalize the military force, Janowitz advocated the creation of a constabulary force capable of applying pragmatic, limited force. This is the model of the National Guard, and it differs explicitly from the aims of Huntington. Like-mindedness relieves the growing tension between society and the military; here the ideal military becomes incapable of undertaking missions civil society would not condone and thus societal values subjectively control the military.[145]

While the various streams of civil-military relations theory diverge into dozens of rivulets, this work will concern itself only with these two foundational tributaries. Other civil-military-relations authors will make additional contributions; the conclusions of this

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[143] Donnithorne, "Principled Agents," 37-41.
[144] This is the central argument of Huntington, *The Soldier and the State*.
[145] See ibid., 83.

work allude to Elliott Cohen's critique of over-applying Huntington's model, for example. For this introductory sketch, though, the competing dyad of Huntington and Janowitz will suffice. The question it yields is, "Which leads to the individual military services providing effective mutual support for one another, civilian control of the military via objective means or control via subjective means?"[146]

3. Military Cultures, Inter-service Rivalry, and Other Institutional Characterizations
Venturing into the realm of 'culture' as an independent or intervening variable is fraught with peril. Any discussion of organizational cooperation invariably touches on the impact of organizational culture, even though the concept takes routine criticism for its lack of explanatory power.[147] The issue of military culture, like most other aspects of this study, presents a multi-level vista. Russell Weigley described an overarching preference of the contemporary U.S. military to fight politically unconstrained wars of annihilation with overwhelming firepower. John Linn and Max Boot argued that, while this might be the cultural preference, the reality was that in fact the country had fought mostly attrition-type wars with significant political restraint.

Builder, Ehrhard, Thomas Mahnken, and Donnithorne have provided well-developed descriptions of the endogenous cultures of the individual military services.[148] Builder's foundational study examined the cultures of the Army, Air Force, and Navy

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[146] By "objective control," this work refers to institutional independence and apolitical obedience of the military organization to congressional and presidential authority. "Subjective control" is the grooming of defense organizations that read and respond to political trends. They have less autonomy about internal structure and policy, but have more participation in political dialogue.

[147] The preeminent military strategist Colin Gray frequently cites Leslie White's critique of culture as "not basically anything…a word concept…used arbitrarily to designate anything;" see Leslie A. White, *The Concept of Cultural Systems: A Key to Understanding Tribes and Nations* (New York: Columbia University Press, 1975), 4n.

[148] Ehrhard takes Builder's seminal effort in the subject of U.S. military service cultures to task as an "uneven, shallow, but occasionally insightful work;" see Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 41n. This work takes the view that, whatever shortcomings exist in a single description, an amalgamation of all four authors presents perhaps a more congruent and detailed view of service cultures.

and their perceptions of each other. Ehrhard characterized the services as having 'monarchic' or 'feudal' power-sharing structures in his excellent study of unmanned aerial vehicle (UAV) development through 1999. Donnithorne built on the foundations laid by Builder and Ehrhard, fully explaining service self-perceptions, value systems, and defining cultural characteristics. In turn, he applied these institutional characteristics to explain service behaviors during policy formation and implementation.

Donnithorne, in order to avoid charges of *post hoc* cultural explanations, was cautious to establish narrow descriptions of service culture before applying in his theory. This work adopts that approach, hopefully with the same rigor and for the same purposes. Therefore, the following service-culture summaries amalgamate Builder, Ehrhard, Donnithorne, and Cannon, and remain intact through the case studies and analysis. If changes in service culture or anomalies emerge in the case studies, they will garner special attention and rigorous explanation.

Ehrhard characterized the Army and Navy as having feudal structures—leadership is shared among several different communities (e.g., infantry, armor, artillery) and decision-making norms respect pluralistic views. More precisely, he specified cultural 'balance points,' implying that the organizations can go through monarchic periods of leadership by a dominant figure but over time will gravitate back to the feudal structure. Conversely, the Marine Corps and the Air Force are monarchic; they have leaders from a single dominant community (for the Air Force, bomber pilots after independence, fighter pilots since the 1980s, with a feudal disequilibrium in the 1970s) who keeps bureaucratic order with strong central control and side payments to lesser constituencies in the service. This facet of service culture impacts innovation. Though monarchic structures tend not to

innovate, they do provide the "centralized, top-down focus" critical to Wilson's depiction of the successful implementation of a new idea. Conversely, a feudal structure may struggle to implement new ideas, even though its egalitarian power-sharing structure allows new ideas to emerge.[149]

Mahnken's work on military culture confirms the importance of in-group and out-group interactions, differentiation among intra-service subgroups, and subgroup reputations. Mahnken noted that identification with service culture trumped subgroup identification between services. For example, although both the Navy and Air Force have significant numbers of fighter pilots, the two respective groups are more likely to divide along service culture preferences for given tactics than they are to agree as a cross-service subgroup of 'fighter pilots.' Mahnken's finding that the military services are particularly effective at fostering endogenous group identity harmonizes with Polzer's general conclusion that cooperating subgroups generally trump collective goals.[150]

Taken together, Polzer's general organizational theory and Mahnken's military-specific application could be discouraging to the political or high-level military leader who wishes to foster inter-service cooperation. The strong group identification military services foster may in practice hinder intergroup cooperation when a collective's interests depend on it—as when the national security 'collective' requires intergroup cooperation and collaboration. Mahnken and Polzer in concert offer an explanation to describe the deleterious effects of inter-service collusion that Coté observed in his study of fleet ballistic missile systems for the Navy, and that dynamic is of interest to this study. The mechanisms they offer are relevant to this study in process-tracing examples of military

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[149] Ibid., 398.
[150] Polzer, "How Subgroup Interests and Reputations Moderate the Effect of Organizational Identification on Cooperation."

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cooperation. Group identification and the dominant interests in each case explain how these factors influence cooperation. For this study, the overarching question is, "How do services' dominant cultures and subcultures advance or hinder joint cooperation?"

4. Defense Establishment Structure: Joint Chiefs of Staff, Department of Defense, Higher Executive, and Congressional Principals

Knowledge of the organizational hierarchies within the defense establishment is critical to explaining jointness. As discussed earlier with respect to agency theory, the principals directing the military within the 'defense establishment' have many faces. While not an area of formally established academic theory, the history of organizations intended to promote jointness in the U.S. military offers a glimpse of a concept that has proven both desirable and elusive over the life of the nation. The pattern that has emerged since 1900 is one of trying to balance the benefits of formal bodies and processes against informal consultation and the force of strong personalities. There is also a repeated trend for the military to recognize civilian dissatisfaction over obvious failures of jointness and to address these with institute modest internal reforms—attempts to preempt more intrusion by civilian authorities.

The turn of the twentieth century brought about major changes in the management of U.S. military power. Polk's direct control of the military during the Mexican campaign of 1846-1848, echoed again in the authority Lincoln exacted over the Union Army, brought to light the political liability of appointing senior military officers based on their party affiliation: returning war heroes had a chance to claim the commander-in-chief's job in the next election. From Polk's experience through the turn of the century, the pattern of formulating military strategy changed. Instead of sending military professionals off to win narrow campaigns, civilian political leaders now voiced policy

objectives and solicited policy recommendations from trusted military officers to achieve them. The rise of Mahanian ideals about the role of the Navy in protecting American shipping and the complexity of the offensive projection of naval power made the strategic calculus increasingly complex.

When serious inter-service squabbles arose during the Spanish-American war, civilian leadership became concerned about the ability of military leaders to concatenate the emerging complexity of military means with national objectives into coherent strategy. Reformers within the military such as the Navy's Admiral Taylor realized this and called for the establishment of improved planning staffs who could address strategic issues through intelligence and planning.[151]

The Joint Board's vague mandate made its role unclear and prevented formal stature from accruing. Although the Board was influential throughout the presidency of Theodore Roosevelt, Louis Morton described it as inconsequential for the formation of military policy after 1914.[152] Rather than approach the group for advice, "civilian policymakers looked for military strategy recommendations outside the Joint Board, often relying upon high-ranking individual officers and the recommendations of boards within their own services."[153] The early history of joint structures is largely irrelevant to the contemporary discussion, but it illustrates that the matter over time grew to be an area of increasing executive and congressional concern as the size and complexity of the armed services grew larger.

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[151] Godin, "Coordinating Rooks and Bishops," 20.

[152] Louis Morton, "Interservice Cooperation and Political-Military Collaboration," in *Total War and Cold War: Problems in Civilian Control of the Military*, ed. Harry L. Coles (Columbus: The Ohio State University Press, 1962), 132-36.

[153] Godin, "Coordinating Rooks and Bishops," 2.

The pertinent structures that underlie modern jointness arose with unification of the armed services and the formal entrenchment in law of the Joint Chiefs of Staff in 1947.[154] Service preferences for self-determination, along with legislative requirements to openly report disagreements within the Joint Chiefs to the secretary of defense and president, created a tendency for the Joint Chiefs to come to internally compromised agreements rather than subject themselves to executive or congressional scrutiny.[155] Huntington thus argued that the JCS is a committee that must subject its decisions to standard legislative compromise procedures, making it a weakly united body.[156] If the "Joint" Chiefs of Staff resort to legislative tactics such as logrolling and making use of ambiguous language to elude making controversial decisions, this tendency is important to a pre-theoretical understanding of jointness.

Exogenous to the services and JCS is the Department of Defense, an executive organization that has gained power—at the expense of the military services—since its creation in 1947. The Secretary of Defense has increased in influence by subsuming the cabinet-level authority the services held before reorganization. The secretary also has proximity to and influence over the Chairman of the Joint Chiefs of Staff, who is himself not in the military chain of command, but who represents the other service chiefs to the President. Reforms during the Eisenhower era worked to further diminish the independent authority of the service chiefs, subverting them to the influence of the Chairman, while further strengthening the authority of the Secretary of Defense and the

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[154] See *The National Security Act of 1947*.
[155] See, e.g., David C. Jones, "Why the Joint Chiefs of Staff Must Change," *Presidential Studies Quarterly* 12, no. 2 (1982); Donnithorne, "Principled Agents," 295.
[156] "Principled Agents," 60.

office of the comptroller.[157] The additional mid-1980s reforms of the Goldwater-Nichols Act continued most of these trends, strengthening both the Joint Staff and the authorities of the unified and specified combatant commanders. Donnithorne's case study of the legislative background is an admirable review; this work borrows its descriptions of the effects of the act as a jumping-off point for understanding the endogenous, meso-organizational, and exogenous influences on joint cooperation. The questions raised by this line of inquiry are complex: "Does the meso-organizational structure of the Joint Chiefs of Staff, the Joint Staff, and specified and unified combatant commanders further or hinder joint cooperation?" and "Do the exogenous powers of the Secretary of Defense further or hinder joint cooperation?"

Knowledge of service cultures, the formal JCS and Joint Staff organizations, and the Department of Defense is but a partial picture of the hydra that is the defense establishment. The final area of theory this work considers is congressional influence, which impacts the military's ability to function in a joint manner on many fronts. Congress has legislative authority writ large to declare war, but generally conducts its oversight in more nuanced ways like hearings, investigations, and reports about defense activities—all centered on its role as the steward of defense spending and, perhaps as important, military promotions.[158] Again, to limit the scope of consideration to a tractable level for a pre-theoretical endeavor, this work considers congressional influence on the single area of defense acquisitions, discussed next.

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[157] Ibid., 290.

[158] Rosen wrote that peacetime innovation "depends on a senior officer or a group of senior officers who first attract officers with solid traditional credentials to the innovation and then make it possible for younger officers to rise to positions of command while pursuing the innovation; see Rosen, *Winning the Next War*, 96.

5. Other Exogenous Factors

The last lens of analysis in the military-specific set is an all-encompassing category that looks for influence on jointness at from exogenous influences beyond the immediate influence of the Defense Department. For example, discussion of joint cooperation would be incomplete without acknowledging the direct and indirect effects that implementation of the Goldwater-Nichols Act has had on defense procurement. Military materiel is part and parcel of interoperability, one of the explicitly codified requirements for jointness. Units equipped with incompatible radios cannot communicate; fast-moving, high-flying aircraft may not be able to differentiate ground targets from friendly forces with sufficient fidelity. Because the act has created two *de facto* procurement systems—one to support service priorities and one to support the requirements of combatant commanders—contemporary battlefield needs, provided they are articulated in persuasive language, can subvert any attempt by services to control their own strategic procurement plans through the budgeting process. The dynamics of these processes affect all of the case studies.

Since more than 150,000 military and civilian personnel work in the acquisition system, spending money at a rate of $21.6 million per hour for the U.S. Department of Defense, the scope of the endeavor is immense and its effects impactful for the issue of jointness.[159, 160] The context of military acquisitions is the planning, programming, and budgeting system (PPBS) developed during the McNamara defense administration in 1961. As "the primary mechanism for determining fiscal needs and funding programs,"

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[159] Walter Pincus, "Defense Procurement Problems Won't Go Away," *The Washington Post*, 2 May 2012. http://www.washingtonpost.com/world/national-security/defense-procurement-problems-wont-go-away/2012/05/02/gIQAyQNvxT_story.html.

[160] Robert N. Charette, "What's Wrong with Weapons Acquisitions," *IEEE Spectrum*, 1 November 2008. http://spectrum.ieee.org/aerospace/military/whats-wrong-with-weapons-acquisitions.

its outputs influence and inform presidential budgetary recommendations as well as congressional appropriations and outlays.[161]

This work stays deliberately clear of most academic theory pertinent to military acquisitions or the PPBS; it is a slew of despond as deep as that of joint doctrine.[162] The present effort does, however, incorporate a simple appreciation of the military acquisitions process, which is that the large amounts of money spent in the process create dedicated interest-group factions in the form of industry and local constituencies. From major weapons systems to footwear, these interest groups have some opportunity to interface with military leaders to convince them of the military value of the goods they produce. They have a greater opportunity to interact with congressional representatives, who seek the dual economic boon of jobs and district spending as a prize for which to fight.[163] The nexus of interests in military acquisitions therefore usually occurs in the context of congressional oversight of the defense budget. This study relies on congressional hearings, reports, and budget documents to 'follow the money' in understanding how interest groups coalesce around defense acquisitions projects. The primary question it raises is, "Do defense acquisition processes advance or hinder joint cooperation?"

A second phenomenon that this work relies on to shape understanding of jointness in the acquisitions context is a pejorative mnemonic applied to the services by groups like

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[161] The acronym later expanded to "PPBES," incorporating "execution."

[162] See, e.g., Dennis M. Buede and Terry A. Bresnick, "Applications of Decision Analysis to the Military Systems Acquisition Process," in *Advances in Decision Analysis: From Foundations to Applications*, ed. Ward Edwards, Ralph F. Miles, Jr., and Detlof von Winterfeldt (Cambridge: Cambridge University Press, 2007); Edmund J. Boyle, Mark M. Higgins, and Ghon S. Rhee, "Stock Market Reaction to Ethical Initiatives of Defense Contractors: Theory and Evidence," *Critical Perspectives in Accounting* 8, no. 6 (1997); Carroll W. Pursell, *The Military-Industrial Complex* (New York: Harper & Row Publishers, 1972); C. Wright Mills, *The Power Elite* (Oxford: Oxford University Press, 1956).

[163] See, e.g., Lexington, "Boots on the Ground," *The Economist*, 1 March 2014, 31; Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 70; Pursell, *The Military-Industrial Complex*, 38.

defense department offices and congressional staffers. Phrased succinctly as 'Dumb, Devious, and Defiant,' the unofficial summation takes aim at the Army, Air Force, and Navy, respectively. Jones and McCaffery have a well-developed explanation of the derivation and meaning of the expression as defense budget officials use it. The stereotypes break down as follows. The Army fails to submit complete budget information. Ironically, the apparent administrative failure often appears to be a way to gain congressional negotiation leverage by making budgetary elements questionable or deniable. The Navy may not comply with comptroller requests, instead providing answers in a format suited for its purposes, justified with explanations that the service analyzes its budget with a "more thorough review process" than other services or DoD could. The Air Force "puts on the best show" for the department, attempting to dazzle reviewers with technology and elaborate presentation. The intent is to gain budget share and gain additional flexibility from Congress, but the approach has led to mistrust when the service clearly masked past program overruns or failures.[164] Washington insiders have applied the cliché to everything from weapons testing to service recalcitrance before base closure panels.[165] Nonetheless, the issue is a part of service-culture description that jointness pre-theory must consider in answering questions broached by consideration of acquisition processes and other aspects of military business touched upon by the

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[164] Lawrence R. Jones and Jerry L. McCaffery, *Budgeting, Financial Management, and Acquisition Reform in the U.S. Department of Defense* Research in Public Management (Charlotte: IAP, 2008), 382-83. The same description has slightly different connotations for the congressional armed services committees: the Air Force "will lie" or "try to outsmart you," the Navy will "ignore you" or "pretend you don't exist," and the Army "will talk when they should keep their mouths shut" or "try to out-cooperate you;" see Stephen K. Scroggs, *Army Relations with Congress: Thick Armor, Dull Sword, Slow Horse* (Westport: Praeger Publishers, 2000), 57-58.

[165] See, *inter alia*, "Navy Accused of 'Stonewalling' on Base Closure Issue," *Charleston News and Courier*, 30 December 1988; Eric Umansky, "Studs and Duds," *Washington Monthly*, December 2001. While their meaning has serious civil-military implications, use of these epithets is usually either lighthearted or uttered at times of frustration; it does not appear to have triggered congressional investigations.

legislative branch.[166] The question is, "Do exogenous organizations' perceptions and stereotypes of the services advance or hinder joint cooperation?" Specific case studies yielded other insight about other exogenous influence on jointness—these are summarized under this category as well.

Adapted from Donnithorne and combining elements described above, Table 2.1 (page 61) offers a summary of relevant cultural factors.

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[166] Carl Builder explains the distinctions among service analysis habits and responsiveness to Congress with his "toilet paper parable;" see Builder, *The Masks of War*, 107-09.

Summary of U.S. Military Service Cultures				
	Navy	*Marine Corps*	*Army*	*Air Force*
ENDS	Armed American embassy: anywhere, anytime	Warriors from the sea; anywhere, for anything	Apolitical servants of the nation	Air controlled by Airmen[167]
	America and her Navy prosper together	Survive to serve	A land force of last resort	Ubiquity of influence at minimum risk
WAYS	Enlisted order, commissioned judgment	Elite warrior identity	The Army way of battle	Decisive strategic potential
	Independent glory of command at sea	Faithful stewards of the national trust	Synchronizing the fragments	Command the air, first and always
				Centrally controlled flexibility
MEANS	Professional and permanent Army	Every Marine a rifleman	Fielding an Army: regulars and the militia	Technology, airplanes, and beyond
	Size matters: bigger-as-better		Soldiers, units, and leaders	Flyers and technicians
DOMINANT STRUCTURE	Feudal	Monarchic	Feudal	Monarchic
Pejorative acquisitions/ congressional stereotype	"DEFIANT:" ignores oversight, does not comply, faith in internal review processes		"DUMB:" provides incomplete information, attempts to "out-cooperate" others	"DEVIOUS:" attempts to dazzle, lies, elaborate claims about technology

Table 2.1: Relevant military cultural variables[168]

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[167] That control of the air by Airmen is an "end" in Air Force culture speaks volumes about a unique organizational conceit. To an unbiased observer, the command and control method used to employ air power in military action would seem to be a means rather than an end.

[168] Summarized from Builder, *The Masks of War*; Donnithorne, "Principled Agents."; Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services."; Jones and McCaffery, *Budgeting, Financial Management, and Acquisition Reform in the U.S. Department of Defense*.

Having described some ten areas of theoretical study that have likely bearing on joint cooperation, this section closes with a summary in Table 2.2 (page 63) listing the theories, central ideas within each theory, and the questions about joint cooperation the theories raise. These areas are by no means a comprehensive list of potential influences on joint cooperation, but seem to be of outsized utility based on a reading of contemporary social theories and defense topics.

	Summary of Applicable Theories		
	Theory	*Relevant idea(s)*	*Question(s) for jointness*
General theories of cooperation	Public goods	- Free riders & sub-optimization - Success with appeal to purpose	- Do services act as free riders in producing security? - Which better encourage jointness, social pressure or appeals to purpose?
	Organization	- Type I/II/III interactions - In-group/out-group competition - Resource competition	- How do threats, bureaucratic politics, and political maneuvering influence jointness? Who creates stable cooperative structures? - How do service subgroup interests advance or inhibit joint cooperation? - Do overlapping capabilities advance or threaten jointness?
	Crisis cooperation	- Crisis conditions influence org. behavior/strategy	- Do military services make decisions about jointness in a context of crisis? - How does the perceived urgency of a dilemma affect decision and cooperation mechanisms?
	Professions	- "Traditional" professionalism vs. control of basic competencies	- Do overlapping service capabilities advance or hinder jointness? - Do subclasses vying for recognition in their respective military services offer a mechanism for joint cooperation?
	Agency	- Principal-agent dilemma - Implementation slack	- Does the large number of principal-agent relationships evident in the defense establishment advance or threaten jointness?
Specific theories about military organizations	Military Innovation	- Intra-service vs. inter-service vs. external sources of innovation	- Do the sources of military innovation advance or hinder jointness? - Do crisis conditions advance or hinder jointness?
	Civil-Military relations	- Objective vs. subjective control of military	"Which leads to better joint cooperation, civilian control of the military via objective means or control via subjective means?"
	Service cultures	- 4 distinct service identities - Feudal vs. monarchic	- "How do dominant service cultures advance or hinder joint cooperation?"
	Defense Department & Joint Staff	- Inter-service/ exogenous orgs. growing stronger relative to services	- "Does the structure of the Joint Chiefs of Staff, the Joint Staff, and specified and unified combatant commanders further or hinder joint cooperation?" - "Does the Secretary of Defense further or hinder joint cooperation?"
	Other Exogenous Factors	- Primary means of congressional defense oversight - Exogenous orgs.' service stereotypes	- Do defense acquisition processes advance or hinder joint cooperation? - Do exogenous organizations' perceptions and stereotypes of the services advance or hinder joint cooperation? - What exogenous influences affect a specific instance of joint relations?

Table 2.2: Summary of theories relevant to jointness

II. Approach and Scope
A. Research Method and Case Study Selection Criteria
This dissertation investigates cooperation among separate U.S. military services. The

motivating desire is to draw predictive conclusions about conditions that lead to

convergent, cooperative and helping behaviors when the services have opportunities to

interact to solve emerging security problems. The nature of the question is complex,

which makes it unlikely that a single-variable relationship will show itself to be the

significant explanatory factor. For this reason, the research method applied in this study

should be capable of identifying the interaction of several relevant independent variables.

Case-study research lends itself to the discovery of these kinds of clusters of contributing

independent variables and is an appropriate choice of empirical test in this

investigation.[169]

Case-study research can help identify multiple and complex combinations of

pertinent variables that lead to observed outcomes, but it has inherent limitations. The

applicability of the theories it generates may not have broad applicability to all other

cases. While able to show the sufficiency of certain variables for a given outcome, case-

study research is often unable to prove necessity with certainty beyond a very narrowly

defined range of cases. Finally, case-study research is ill equipped to make definite

determinations about the relative contribution of a variable to an observed outcome.

Though a certain dependent variable may appear in all cases, small-*n* samples prove

neither that variable's necessity nor the amount of dependence the variable of interest has

on the outcome. Therefore, case-study selection should attempt to strike a balance

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[169] See George and Bennett, *Case Studies and Theory Development in the Social Sciences*, 26. The authors describe the conjunctions of variables that are the "most useful" for showing necessity or sufficiency for a given outcome.

between the trade-offs this research method imposes and the complex and in-depth understanding of individual cases it makes possible.[170]

Only two major works come close to offering theories of jointness. Kenneth Allard made a masterful summary of the command-and-control difficulties inherent in modern joint operations, concluding that a "*baseline of interoperability*" is a prerequisite for successful joint operations.[171] One of the most relevant insights from this work borrows J.C. Wylie's assessment that "there is as yet no accepted and recognized general theory of strategy."[172] To Allard, "the absence of a more general strategic paradigm also helps explain why military organization has been such a persistent problem in the postwar world."[173] Allard deals with essential variables like service culture, joint doctrine, exogenous levels of military control, and the role of defense acquisitions in enabling jointness. Though he did not call it a theory of jointness *per se*, his summary that "*wise technological choices and tough organizational decisions*" enable effective command and control is a well-reasoned argument upon which this work builds.[174] Because many of Allard's recommendations seem couched toward the defense acquisition process, including his very useful case-study analysis of data-link networks, a pre-theory of jointness requires us to go further.

The second work that merits mention on this short list is Huntington's *The Common Defense.* As with Allard's later work, Huntington's focus was not a discussion of jointness for its own sake, though he does describe inter-service rivalry and the effect it

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[170] See, *inter alia,* ibid., 27; Peter A. Hall, "Aligning Ontology and Methodology in Comparative Politics," in *Comparative Historical Analysis in the Social Sciences*, ed. James Mahoney and Dietrich Rueschemeyer (Cambridge: Cambridge University Press, 2003).

[171] Allard, *Command, Control, and the Common Defense*, 257.

[172] J. C. Wylie, *Military Strategy: a General Theory of Power Control* Classics of Sea Power (Annapolis, Md.: Naval Institute Press, 1967), 67.

[173] Allard, *Command, Control, and the Common Defense*, 262; emphasis in original.

[174] Ibid., 271-72.

has on increasing exogenous civilian control of the military.[175] In addition, he named

other factors that bear on this study, including the relationship among the hierarchical

levels of the defense establishment, the importance of defense acquisitions, and pressure

toward unanimity among the Joint Chiefs of Staff. Huntington concluded that Congress

had lost its power over the military "not to the President but to the executive branch," an

observation with which this study concurs.[176] Huntington's foundational work, if dated

because it was published twenty-five years prior to the Goldwater-Nichols Act, remains

relevant even though the structure of U.S. defense institutions has changed. One of the

distinctions of this work it its level of analysis: Huntington was primarily concerned with

the balance between high-level domestic politics and international relations; his concern

for jointness is a by-product of that discussion.

The remaining relevant literature does not advance theories of jointness, instead

broadly dealing with American civil-military relations; doctrinal and weapons system

innovation; independent service cultures' effect on policy development and

implementation; and the prosecution of battles, campaigns, and wars.[177, 178, 179, 180] In

order to fill the void of theory on inter-service cooperation, this study will consider and

examine hypothesis-generating candidate cases. This characteristic validates—in the face

of the common advice to avoid this practice—the selection of cases based on the

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[175] See, e.g., Glen H. Snyder, "The Politics of National Defense: A Review," *The Journal of Conflict Resolution* 6, no. 4 (1962): 372.

[176] See, e.g., Samuel P. Huntington, *The Common Defense: Strategic Programs in National Politics* (New York: Columbia University Press, 1961), 127.

[177] See, e.g., *The Soldier and the State*; Janowitz, *The Professional Soldier: A Social and Political Portrait*.

[178] See, e.g., Posen, *The Sources of Military Doctrine*; Rosen, *Winning the Next War*; Donald MacKenzie, *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance*, ed. Wiebe E. Bijker, W. Bernard Carlson, and Trevor PinchInside Technology (Cambridge, MA: The MIT Press, 2000).

[179] See, e.g., Builder, *The Masks of War*; Thomas G. Mahnken, *Technology and the American Way of War Since 1945* (New York: Columbia University Press, 2008).

[180] See, e.g., Allan R. Millett and Peter Maslowski, *For the Common Defense: A Military History of the United States* (New York: Free Press, 1984); Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (Bloomington: Indiana University Press, 1973).

dependent variable: cooperative behaviors between military services dealing with emergent security problems.[181] Throughout the study, the term 'cooperative behavior' refers to actions taken by individual services that further the ends of one or more other military services while meeting a shared security challenge—such interaction need not necessarily be marked by amicable relations.[182]

The nature of inter-service cooperation occurs in an atmosphere characterized by an admixture of "conflicting and complementary interests."[183] Therefore, the cooperative behaviors described span a spectrum from what would be called 'cooperative' by most casual observers—i.e., non-competitive, helping and even selfless—to competitive or even conflictual in nature.[184] In taking this approach, the study considers a wide range of behaviors, and allows for the possibility that cooperation is possible with or without explicit agreement between parties—it may be tacit, negotiated or imposed from without.[185]

Drawing from Stephen Van Evera's and George and Bennett's recommendations for case study selection criteria, this study selects a set of historical cases and researches them with the objective of drawing conclusions from past military cooperation

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[181] For a definition of hypothesis-generating case studies and their contribution to theory generation (apart from theory *per se*), see Jack S. Levy, "Case Studies: Types, Designs, and Logics of Inference," *Conflict Management and Peace Science* 25, no. 1 (2008): 5-6. For discussion of the validity of selection on the dependent variable and small-*n* case study selection for theory generation, see ibid., 8.

[182] This definition is broad by design and borrows from Milner's definition of cooperation among international regimes; see Helen Milner, "International Theories of Cooperation among Nations: Strengths and Weaknesses," *World Politics* 44, no. 3 (1992).

[183] Axelrod and Keohane discuss the possibility of cooperation among nations in a context of anarchy. They note findings that "military-security issues display more of the characteristics associated with anarchy than do political-economic ones;" see Axelrod and Keohane, "Achieving Cooperation Under Anarchy," 226-27.

[184] See Svedin, *Organizational Cooperation in Crises*, 25.

[185] In comparing theories of international relations cooperation, Milner adopts this broad definition, further asserting that "as long as mutual policy coordination to realize *joint* gains occurs, then it is cooperation by our definition;" see Milner, "International Theories of Cooperation," 470. (Emphasis on *joint* added by author.)

opportunities. As such, eligible cases should exhibit (individually or as a collection) a set

of six characteristics:[186]

1) provide clear examples of cooperative service behavior;[187]

2) sample all of the U.S. military services;

3) involve all bureaucratic organizational levels (endogenous, meso-organizational and exogenous) that bear on service behavior;

4) describe issues that exhibited considerable bearing on the services' institutional attention and resources;

5) analyze instances of both 'most likely' (cooperation where cultures and past history are conducive to cooperation) and 'most difficult' (cooperation among services who are historically and culturally prone to fighting) instances of cooperation; and

6) occur in the contemporary U.S. national military decision-making establishment.[188]

The selection criteria above require a methodological defense; none are self-

explanatory. The first requirement ensures that each case captures the dependent variable

of interest. This specification assumes that the services' default behavior on non-trivial

matters is often divergent—they do not cooperate by default unless the threat of failure

looms large.[189] Drawing on the documented history of the armed services and assertions

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[186] For a list of eleven selection criteria and the types of case studies to which they apply, see detailed listing, see Stephen Van Evera, *Guide to Methods for Students of Political Science* (Ithaca: Cornell University Press, 1997), 77-88; Milner, "International Theories of Cooperation," 470.

[187] A counter-argument is that examples of clearly divergent (non-cooperative or mutually destructive) behaviors might be instructive in illustrating conditions that are unfavorable to cooperation and thus to be avoided when trying to promote it. Since this is the normal state of bureaucratic politics, there seems to be more *prima facie* value in taking an approach with positive examples.

[188] The National Security Act of 1947 and the changes defined by the Goldwater-Nichols Act of 1986 define contemporary military decision-making structures and the context in which military service cultures exist. Prior to 1947, the Department of War and the Department of the Navy existed in a completely different bureaucratic ecosystem than the one that took shape since the latter half of the twentieth century. See *The National Security Act of 1947*; *The Goldwater-Nichols Department of Defense Reorganization Act of 1986*; Van Evera, *Guide to Methods for Students of Political Science*, 77-88.

[189] This tendency is common to all individuals and organizations; see Morton H. Halperin, *Bureaucratic Politics and Foreign Policy* (Washington: The Brookings Institution, 1974), 4-6; Olson, *The Logic of Collective Action*, 7-16; Svedin, *Organizational Cooperation in Crises*, 7-11. This is a bold, perhaps

in public organizational theory, this investigation assumes that true inter-service

cooperation is rare; studying instances where it has occurred (as opposed to the plethora

of examples where it did not happen) are more likely to reveal useful conclusions about

causality, i.e., what supports and what hinders inter-service cooperation.[190]

The second requirement assumes that a service's organizational culture is likely an

important contributing variable to the cooperative tendencies of the organization.[191] It

also ensures selection of cases that subscribe to Van Evera's recommendation to choose

"cases about which competing theories make opposite predictions."[192] The willful

independence of the Navy toward civilian authorities and other services is well

documented with historical evidence, which suggests a lesser proclivity for cooperation

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theoretically falsifiable claim. For example, Jeffrey Vandenbussche surmised that as a military fight intensifies toward an "existential" level that joint command and control issues would fade away along with political sensitivity. One can imagine warfare so intense that services set aside philosophical differences as they make maximum effort. However, since several theaters of war exhibited divergent inter-service behavior even in WWII—the most existential conflict yet to arise in U.S. history—this study adopts an assumption that cooperation is elusive enough that it must be pursued. Indeed, comparison with Vandenbussche's central thesis about command and control (briefly, existential conflict drives joint force commanders to de-centralized command and control while non-existential conflict favors centralized command and control) with one of David Johnson's about COIN warfare (though non-existential, it requires de-centralized command and control to succeed) shows that there is a tension over strategic preference and the spectrum of war that shows disagreement likely to be just around the corner, no matter how intense a conflict; see Jeffrey L. Vandenbussche, "Centering the Ball: Command and Control in Joint Warfare" (Master's thesis, School of Advanced Air and Space Studies, 2007), 68; Johnson, *Learning Large Lessons*, xxiv.

[190] This approach follows Rosen, who looked at successful examples of innovation, and differs from Posen and Coté, who looked at one or more examples of failure to innovate.

[191] This study adopts the idea that service cultures and sub-cultures are both likely to affect cooperation, while agreeing with organizational-culture literature that asserts cultural phenomena are fluid, not subject to superficial managerial prescription and not yet well understood. See, e.g., J. Steven Ott, "Understanding Organizational Culture," in *Classics of Public Administration*, ed. J.M. Shafritz and A.C. Hyde (Belmont: Wadsworth Publishing, 2011); Edgar H. Schein, "The Concept of Organizational Culture: Why Bother?," in *Classics of Organization Theory*, ed. J.M. Shafritz and J. Steven Ott (Belmont: Wadsworth Publishing, 2010); Sonja A. Sackman, "Uncovering Culture in Organizations," *Journal of Applied Behavioral Science* 27, no. 3 (1991); Lois Recascino Wise, "The Public Service Culture," in *Public Administration Concepts and Cases*, ed. Richard J. II Stillman (Boston: Wadsworth Cengage Learning, 2010).Within the military, Mahnken argued that service culture generally trumps subcultures—this study reserves judgment on that idea, holding it in tension through the case studies; see Mahnken, *Technology and the American Way of War Since 1945*.

[192] Van Evera, *Guide to Methods for Students of Political Science*, 83.

than other services.[193] Using cases from all services where cooperation is in evidence would guarantee at least one outlier case, another desirable characteristic for hypothesis-generating investigations.[194]

Common purpose relates the third and fourth criteria; they drive selection of cases of sufficient scope. The interactions of service subcultures, separate services, and the organizations that oversee them (chiefly the Department of Defense and Congress) have influence on cooperative behavior. However, for all levels of the bureaucracy to become involved, the security problem in question must involve a sufficient degree of force allocation, budgetary share, and service-cultural interest to overcome normal multi-level bureaucratic inertia.[195] The interaction of an Army battalion and Air Force squadron, for example, are not predictors of 'inter-service' cooperation unless they reflect larger organizational dynamics. The two criteria in concert—because the time required for an issue to interest multiple bureaucratic levels is often long—also maximize chances that cases selected will exhibit the "large within-case variance in the value on the independent variable, dependent variable or condition variable across time or space" that Van Evera recommends.[196]

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[193] See, e.g., Barlow, *Revolt of the Admirals*; Builder, *The Masks of War*; Donnithorne, "Principled Agents," 381-82; Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services."Since there is no explicit theory of interservice cooperation, the notion of service cultural contributions to the dependent variable of cooperation is more precisely termed a pre-theory; see Martel, *Victory in War: Foundations of Modern Military Policy*, 5-6.

[194] Van Evera, *Guide to Methods for Students of Political Science*, 86.

[195] Rosen noted "the relatively minor role civilian political leaders have had in the initiation of and management of military innovation;" see Rosen, *Winning the Next War*, 255. Michael Desch found that civilian control of the military becomes increasingly difficult if the nation is not facing external security concerns; see Michael C. Desch, *Civilian Control of the Military: The Changing Security Environment* (Baltimore: The Johns Hopkins University Press, 1999), 6. Coté found "powerful opposition" against civilian intervention among services who are collaborating; see Coté, "The Politics of Innovative Military Doctrine," 389.

[196] Van Evera, *Guide to Methods for Students of Political Science*, 82.

The fifth criterion makes it likely that cases will exhibit "extreme values of the independent variable, dependent variable or condition variables."[197] The same criterion also makes it likely that cases will be comparable via the method of differences, exhibiting similar organizational characteristics and differing values of observed variables.[198]

The sixth criterion aims to address three separate desirable characteristics of hypothesis-generating case studies. The first is a desire for a sufficient level of documentation that permits thorough research. Specific records and evidence of inter-service cooperation and divergence are more accessible in modern archival records. Another characteristic the criterion drives is similarity to contemporary problems. Working with cases in the modern military era also gives them resemblance to current policy issues. Finally, this criterion guarantees that candidate cases will have a measure of shared characteristics. While less important than resemblance to current policy issues for hypothesis-generating work, the criterion also makes any hypotheses generated more likely to be widely applicable.[199]

Because the objective of this work is to establish a pre-theory of a complex dependent variable with a small-*n* case study sample, it adopts the case-study method of process tracing described by George and others.[200] Specifically, the chapters will reflect *detailed narrative* and *general explanation* to identify the pertinent pre-theoretical elements of jointness.[201] The work anticipates varying audience-specific definitions of jointness along with the multitude of applicable theories listed in this chapter. These

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[197] Ibid., 83.
[198] This is desirable per ibid., 84.
[199] Ibid.
[200] See Chapter 10 in George and Bennett, *Case Studies and Theory Development in the Social Sciences*.
[201] See ibid., 210-12.

combinations allow for multiple completing explanations of jointness. This work will not

fight the possibility of multiple valid explanations (i.e., equifinality) in explaining

jointness. Indeed, process tracing makes it amenable to identifying equifinality. The good

news is that if there are many ways to grow the phenomenon of jointness, there may be a

corresponding number of means available to those who would attempt to sow the fields

of national defense with more of it.

With the rationale for case selection criteria established, an investigation of

candidate cases follows.

B. Case Justification
1. Case Population
A host of existing case studies from scholarship about the U.S. military could contribute

to this investigation. Though these cases concern military topics other than inter-service

cooperation, their data may offer evidence about the conditions required for cooperation.

Table 2.3 (page 74) presents a set of relevant, albeit non-exhaustive, list of candidate

cases. This pool of cases intentionally excludes case studies treated by Posen (German

blitzkrieg, British air defenses, the Maginot Line), Rosen (twenty-one U.S. and U.K.

military innovations), Coté (U.S. Navy and Air Force development of strategic ballistic

missiles), Ehrhard (UAV technology deployment) and Donnithorne (Army/Navy

response to Goldwater-Nichols Act and Army/Marine Corps during Rapid Deployment

Joint Task Force development). The European examples were not selected for this study

because of resource limitations and the desire to answer the cooperation question from

and American perspective. However, many of these cases would be suitable to further

develop the pre-theory suggested by this study. The U.S. cases can directly test the

validity of this study's conclusions, and the European examples provide an opportunity to examine the topic of joint cooperation from a multinational perspective.

Title	Description	Era	Services	Cooperative Outcome
War Plan Orange	Navy's plan to counter Japanese expansion & aggression in the Pacific	1897-1945	Navy plan; Army & AAF in war	Island-hopping plan; model for ops executed during WWII
Korean combined arms	Control of 7th Fleet, 5th Air Force aircraft; CAS coordination	1950-53	Air Force, Navy, Army	Tactical control/ coordination never settled[202]
Vietnam Route Pack structure	AF & Navy deconfliction of tactical air routes	1966-1972	Air Force & Navy	Deconfliction only; rare coordination between AF/Navy airframes
AirLand Battle	Army & Air Force plan for tactical integration in war with Soviet Union	1973-1991	Army & Air Force	Major policy, tactical & acquisition coordination; created command/control systems used in Op Desert Storm; strategic air power dominance reduced vis-à-vis tactical cooperation w/Army
AEF structure	AF reorganization; model for joint force presentation to combatant commanders	1990-2002	Air Force (several AF sub-groups)	TAC, MAC, SAC dissolved as primary AF sub-commands; ACC became dominant warfighting command
Balkan Air Campaigns	Interdiction and CAS during Bosnia and Kosovo conflicts	1995-1999	Air Force & Navy	Dialogue and increased integration of joint air assets via ATO process
JPATS acquisition and development	AF/Navy procure a joint primary aviation trainer, related training systems	1988-1995	Air Force and Navy	Joint aircraft acquisition and joint training programs
Afghanistan and Iraq COIN air power	Rapid expansion of CAS and ISR	2001-2012	Air Force, Army, Navy	20-fold increase in UAV orbits; several technological and command-and-control CAS and ISR innovations

Table 2.3: Candidate Case Studies

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[202] See Trest, *Air Force Roles and Missions: A History*, 141.

2. Selected Case Studies

A shorter list of suitable candidate cases presents itself after applying the first evaluation criterion, which specifies strong evidence of inter-service cooperation. These include AirLand Battle, JPATS acquisition and the development of COIN-specific air power capabilities to support Afghan and Iraqi operations. There is a modicum of inter-service cooperation demonstrated in Korean tactical-air operations, the Vietnam era route-pack system and the Balkan air campaigns. However, the inter-service cooperation observed is weak, and the resources required to gain the outcome do not rise above the level of theater commanders or theater component commanders.[203] Several of the U.S. case studies by Posen, Coté, and Donnithorne do meet the criterion for strong inter-service cooperation, and will serve as reserves for preliminary intra-case hypothesis testing, comparison, and subsequent theory testing.

Table 2.4 (page 77) lists the three candidate cases selected for this study, including expanded descriptions of how they adhere to the first criterion as well as examples of how they meet the third and fourth selection criteria. The table omits the second criterion ('samples all services'); taken as a group, the case selections sample three of the four services—the next section addresses the omission of the Marine Corps. Similarly, the group of cases *in toto* meets the fifth criterion ('most likely/most difficult examples'). They demonstrate examples of cooperation between the Air Force independently with the Army—historically a partner and with whom the Air Force frequently exhibits an allied bureaucratic relationship—and the Navy—which since the inception of the Air Force has

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[203] See Ian Horwood for the roots of inter-service rivalry over air power in the Korean War; Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 16-19. He, at greater length, discusses the "fragmentation of command authority" and "dispersal of responsibility for air power resources" in the Vietnam War; ibid., 63. Public disputes between the leading Airman (Lt. Gen. Short) and the operational commander (Gen. Clark) exemplify the lack of cooperation among the services during Operation Allied Force (Kosovo in 1999); see Johnson, *Learning Large Lessons*, 82-85.

been bureaucratically and operationally aloof and at times fiercely adversarial. Finally, all

the cases represent U.S. examples from the current era of military bureaucracy (the sixth

criterion), and further take place during or after the Goldwater-Nichols Act adjustments

to the defense establishment. This aids in the overarching quest to discover conclusions

that are relevant to emerging policy questions.

Title	Criterion #1: Evidence of Cooperation (w/ proof of effectiveness)	Criterion #3: Involves all bureaucratic levels	Criterion #4: Considerable bearing on institutional resources and culture
AirLand Battle	31 initiatives (Desert Storm equipment, command and control structures, effective joint operations in Iraq)	-Cooperation between operations directorates for Army and Air Force -Drove major acquisitions and training plans -Effort endorsed by DoD; subtext of GNA'86 influenced initiatives	-Drove organize/train/equip for two services -Provided major equipment, manning and command/control structure for next major war (Desert Storm)
Joint Primary Aircraft Training System (JPATS)	JPATS acquisition awarded in 1995 (system is still in place and driving primary aviation training for two services)	-Training subgroups in both services allied -Senior leaders in both services resisted initiative -DoD and congressional pressure brought to bear to force innovation	-Initiative controls primary aviation training systems for both services -Singular example of Air Force/Navy cooperation with respect to air power
Afghan/ Iraqi COIN air power	Major increase in support to COIN fight from air assets (20-fold increase in UAV ISR orbits; major changes to fighter CAS training and integration with Army after 2005)	-Air-ground system participants and integrators recognized need for better capability -AF senior leadership resisted change; Army pushed -DoD direct involvement to change AF behavior	-Major changes to training, unit organization and acquisition programs -Resulted in forced change of senior AF leadership -Continues to be a major focus of AF budget debates and force structure planning

Table 2.4: Selected Case Studies

3. Weaknesses

While meeting most of the requirements for the selection of case studies outlined above, there are some shortcomings in the sample. The selected cases adequately meet the first criterion to provide evidence of cooperation, but they fall short of the second criterion's specification to sample all military services. The case studies selected do sample from all the military departments, but they do not specifically address the Marine Corps. Though in the Department of the Navy, the Marines are a separate service with distinct culture, values and approach to cooperative matters.[204] Donnithorne and Ehrhard have both highlighted the value of including the Marine Corps independently when evaluating variables affected by service culture.[205, 206]

The cases selected meet the third criterion, but the JPATS case is perhaps lacking with regard to the fourth criterion. While primary aviation training is foundational to the air arms of both the Air Force and the Navy, the amount of budget it consumes and its impact on cooperation in other arenas is small. Another concern is that all other case studies deal with combat applications; training programs are distinct from military operations pursued in solving immediate security problems. Nevertheless, this unique instance of Air Force-Navy cooperation and its satisfactory comparison with all other criteria beg the reader to suspend judgment of the case selection until the analysis is presented.

The case-study sample meets the fifth and sixth criteria. The sixth limitation, restraint to the contemporary era of American military decision-making, is a double-edged sword that merits

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[204] Other analyses of service culture make the same omission, notably Builder, *The Masks of War*, 9. Builder's assertion that the Marines do not enter "the defense planning arena as an independent institutional actor with a significant voice in the national approach to strategy or military force planning" is quite debatable. When it comes to combined-arms cooperation, it is the author's opinion that the Marines' focus on combined-arms effectiveness allows doctrinal flexibility unadulterated by the lens of service strategic preference. The Marines also enjoy disproportionate public and congressional support compared to their institutional size.

[205] Donnithorne, "Principled Agents," 6n.

[206] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 329.

further comment. Specifying this requirement raises the possibility that the investigation is only applicable within the current era, perhaps neglecting other important enduring characteristics of American use of military power that could be revealed in other time periods. The probability that the four services will address future security challenges from within the confines of the 1947 and 1986 legislation that has defined the boundaries of American defense until the present makes this an acceptable risk.

III. Summary
This chapter established a dichotomy of understanding about the concept of military jointness, arguing that a determination of why military services do and do not cooperate is worthy of rigorous academic study. It next outlined the scheme of this dissertation, which purports to undertake that effort. Because several academic disciplines promise explanatory power with respect to jointness, it recommended a multi-disciplinary approach, using Martel's approach for 'victory' to refine a definition and propose a pre-theoretical framework for 'jointness.' Borrowing from general theories about organizations and specific theories about the military, the survey section endeavored to show how several types of existing theories might raise pertinent questions about jointness. Having laid out several theoretical tools with potential applicability, it offered a defense of the case studies selected for this work and the methodological approaches used for research. The next three chapters contain case studies that attempt to provide practical examples of observed joint cooperation.

CHAPTER THREE

COLD (WAR) COMFORT: AIRLAND BATTLE, 1973-1991

The Departments of the Army and the Air Force concur that the opportunities are right, the level of joint interest is high, and that valid military requirements exist to initiate an agreement of inter-service cooperation in joint tactical training and field exercises based on the AirLand Battle doctrine as promulgated in Army FM 100-5, Operations*, 20 August 1982. The goal of this effort is to provide operational commanders the most capable, flexible, and mutually enhanced mix of forces for joint execution of the AirLand Battle against enemy forces.*[207]

<div align="right">

General Edward C. Meyer, U.S. Army Chief of Staff
General Charles A. Gabriel, U.S. Air Force Chief of Staff
April 1983

</div>

Imagine the reaction if TAC [the Air Force's Tactical Air Command] had persuaded Army Training and Doctrine Command (TRADOC) to sign a foreword which read, "'Global Reach—Global Power' sets the general azimuth for evolution of doctrine, organization, training, material, and leader development by both services." In effect, that's what the Army has come close to doing in reverse. The danger in this relationship is the potential for the subordination to the Army, and/or neglect of, capabilities and doctrine unique to the Air Force.[208]

<div align="right">

Lieutenant Colonel David Deptula, U.S. Air Force
August 1991

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I. Introduction and Background

A. Overview of AirLand Battle

The first example of inter-service interaction that this work unpacks is an effort undertaken by

the Army and Air Force, an example of cooperation that gleamed during its era of influence like

the toes of an inspection-ready pair of black leather combat boots.[209] Both participating services

hailed the effort as an example of joint cooperation.[210] This hard-rubbed finish of jointness did

not appear overnight; both services polished, over many years, a base coat of cooperative

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[207] Edward C. Meyer and Charles A. Gabriel, "Memorandum of Understanding on Joint USA/USAF Efforts for Enhancement of Joint Employment of the AirLand Battle Doctrine," (Washington DC: U.S. Army and U.S. Air Force, 1983). Hereafter referred to as "Army-Air Force AirLand Battle MOU."

[208] Memorandum: Trends in Joint, Army, and USAF Doctrine Development; K239.0472-1; IRIS No. 0876156; Air Force Historical Research Agency, Maxwell AFB AL. *Global Reach, Global Power* was a white paper published by the Air Force that envisioned the service's contribution to the March 1990 edition of the National Security Strategy; Donald B. Rice, "The Air Force and U.S. National Security: Global Reach—Global Power," (Washington DC: Department of the Air Force, 1990).

[209] Black boots were the prevailing 'utility' uniform footwear on the U.S. military during the era of AirLand Battle. As with the accompanying 'battle dress uniform,' marked by its camouflage pattern of black, brown, and dark green splotches, they were designed to blend in to the deciduous forests of Central Europe and were of a weight suited for the area's temperate climate.

[210] The primary memorandum of understanding between the service chiefs responsible for AirLand Battle directed "increased *joint* training" and listed as an objective the resolution of "any doctrinal and procedural concerns as AirLand Battle doctrine is integrated into *joint* theater operations" (emphasis added); Meyer and Gabriel, "Army-Air Force AirLand Battle MOU."

overtures laid down by the senior service. After a unilateral effort begun by the Army in 1973,

the two services started to work in earnest after 1977 on concepts that would mature into

AirLand Battle. A program of mutual assistance then emerged that reached an administrative

apex with the signing of several inter-service agreements between 1983 and 1986.[211] AirLand

Battle was more than just a shiny façade for garrison-bound generals, though. It provided an

answer to the most pressing military problem of its day and imbued a significant part of both

services' thinking with unified structure and vision about anticipated combat. This influence on

service thinking was informed by and interactively influenced the judgment of the exogenous

defense and national security communities. It led to renewed emphasis on the concept of

'operational art,' the linking of actions on the battlefield in a systemic way via an overall military

campaign that contributes to meeting a nation's or coalition's grand strategic goals.[212] Even

more significantly, it influenced requests and justifications for budgetary share, which was

perhaps the test that most conclusively proved the concept was not a mere paper tiger.[213]

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[211] Talks began in 1977 "over how to integrate USAF and USA tactical assets," emphasizing chemical, conventional, and nuclear weapons integration; Thomas A. Cardwell, III, *Airland Combat: An Organization for Joint Warfare* (Maxwell AFB AL: Air University Press, 1992), 70. The services signed fourteen memoranda of understanding, agreements, joint service statements, and other directives related specifically to AirLand Battle initiatives; see Davis, *The 31 Initiatives*, ix-xi.

[212] The study and definition of operational art is a vibrant topic within the U.S. military. The rudimentary definition given here borrows from "Joint Publication 1: Doctrine for the Armed Forces of the United States," I-8. It also samples terms that appear frequently in older U.S. Army and Joint doctrine. Walter Piatt explained the difficulty and complexity of defining operational art to the audience charged with using it, noting that a draft chapter devoted to the term in an in-work FM 100-5 was "almost sixty pages in length," and "caused confusion in the field;" Walter E. Piatt, "What is Operational Art?" (SAMS Monograph, School of Advanced Military Studies, 1999), 1. Likewise, that which constitutes "strategy" or is "strategic" is subject to vigorous debate at best and malleable definitions at worst. I favor Everett Dolman's formulation, which defines strategy as a continuous search for an enduring position of advantage; Everett Carl Dolman, *Pure Strategy: Power and Principle in the Space and Information Age* (New York: Frank Cass, 2005). The military establishment offers up its own less abstract definitions: "Strategy is a prudent idea or set of ideas for employing the instruments of national power in a synchronized and integrated fashion to achieve theater and multinational objectives;" "Joint Publication 1: Doctrine for the Armed Forces of the United States," I-7. Current joint doctrine does not define military strategy, though an older version of the document offered: "The art and science of employing the armed forces of a nation to secure the objectives of national policy by the application of force or the threat of force;" "Joint Chiefs of Staff Publication 1: Department of Defense Dictionary of Military and Associated Terms," (Washington DC: Joint Chiefs of Staff, 1984).

[213] See John A. Wickham, Jr. and Charles A. Gabriel, "Memorandum of Agreement on U.S. Army - U.S. Air Force Cross-Service Participation in the POM Development Process," (Washington DC: Department of the Army and

AirLand Battle also influenced the Navy and Marines to couch their war plans and funding

justifications in terms of the concept, which demonstrated that the concept had a unifying effect

across the entirety of the endogenous defense establishment.[214]

AirLand Battle requires careful exposition, as it is a construct of some complexity. Though

it drove meaningful cooperative efforts for over a decade, it had a combat half-life comparable to

that of a spit-shine meeting a muddy battlefield. It was an abstract concept colored by different

hues of meaning within various audiences. The term itself at first blush seems to be military

newspeak, implying that jointness could be insinuated by shoving two combat environments

together with an IBM *Selectric* typewriter.[215] One need not dig far, however, to debunk ideas of

sophistry, sinister linguistic intentions, or mere neophilia and realize that AirLand Battle's

progenitors were from the outset sincere in their quest to improve both military capability and

interoperability. They also, for a variety of reasons, had an interest in making this effort apparent

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Department of the Air Force, 1984). The Program Objective Memorandum (POM) "recommends the total resource requirements and program within the SECDEF's fiscal guidance" and is "the basis for component budget estimates;" "Program Objective Memorandum," ACQuipedia, accessed 27 February 2014, https://dap.dau.mil/acquipedia/Pages/ArticleDetails.aspx?aid=d72dabd4-f4f5-4864-96a5-f3357ff50280. Two services working together on POM submission meant that they were effectively collaborating on the share of the President's budgetary request they hoped to receive.

[214] David Johnson indicated that the Navy's Strategic Studies Group, which began in 1981, originated in part due to Department of the Navy concern that maritime services had not adequately articulated their relevance to the mooted Soviet conflict; David E. Johnson (Director, Chief of Staff of the Army Strategic Studies Group), personal interview with the author, 24 February 2014. Doug Skinner, writing from an official Navy perspective, provides a succinct summary of the influence AirLand Battle had on maritime thinking. While arguing that there was a fundamental difference between AirLand Battle's "doctrine" and "the naval strategy," he made it clear that the motivating elements behind both were the justification of "increased expenditures on R&D procurement" and the possibility of conflict with the Soviet Union and its allies in Central Europe; Douglas W. Skinner. "AirLand Battle Doctrine." Alexandria VA: Center for Naval Analyses, 1988, 33-34.

[215] If not an Orwellian usage, 'AirLand' as an adjective seems at least anti-Chomskyite, suggesting intent, via linguistic stricture, to impede reasoning or critical thought about the distinction between land and air. In the eyes of the skeptic or the paranoid, it dissolves, in the absence of debate, well-developed parochial views about the two warfighting domains; see A. Noam Chomsky and David Barsamian, *Power Systems: Conversations on Global Democratic Uprisings and the New Challenges to U.S. Empire* (New York: Henry Holt and Company, 2013), 130-41. Most of the archival documents reviewed for this case study exhibit evidence that they were produced using the dominant electronic typewriter line of the era, marked by the Selectric line's multiple pitches and fonts—mostly Courier, a proprietary original for the machine. The cursive "signatures" and "handwritten addresses" of TAC flag officers are a quaint reminder of a bygone technological era, and reflect executive support staff able and willing to swap out the machine's typeball for a special personal touch; see Teresa N. Hayden, "Back When IBM Had Balls," accessed 4 March 2014, http://nielsenhayden.com/makinglight/archives/007893.html.

to outside audiences. In sum, AirLand Battle was a sweeping model for how the Army and the

Air Force might fight a future war together.[216] Its stated intent was to combine service

capabilities effectively and efficiently to allow the U.S. to prevail against a numerically superior

adversary in a conflict. Though military publications associated with AirLand Battle often

emphasized its applicability to *any* military conflict, the vision that inspired it was an invasion of

Central Europe by the Soviet Union, with the U.S. fighting alongside its North Atlantic Treaty

Organization (NATO) allies to repel and defeat Warsaw Pact troops that outnumbered the

combined resources of North American, West German, and other European partners.[217]

B. Themes of This Chapter
The narrative arc of AirLand Battle and the cooperative initiative it inspired takes shape from an

immediate and well-publicized national and international security threat. Rapid growth of the

Soviet Union's military power and that of its Warsaw Pact satellite states—power concentrated

in low- to medium-grade conventional arms—worried the West because it constituted the

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[216] General Donn Starry confirmed that the term "AirLand Battle" had its roots in the extensive cooperation between Tactical Air Command (TAC) and the Army's Training and Doctrine Command (TRADOC) that had been ongoing since 1973; Donn A. Starry (General (ret.), USA; former Commander, TRADOC), interview with Dr. Harold Winton, 13 May 1995. He also made it clear to those who would promulgate the concept through the Army's doctrine that the Air Force's buy-in was critical for AirLand Battle's success; Huba Wass de Czege (Brigadier General (ret.), USA), interview with Dr. Harold Winton, 16 February 1995. Both interviews are cited in Harold R. Winton, "Partnership and Tension: The Army and the Air Force Between Vietnam and Desert Shield," *Parameters* (1996): 116.

[217] The Army's primary statement of AirLand Battle doctrine, the 1986 edition of *Field Manual 100-5,* states that the service must face a broad range of enemies, from "terrorist groups" to "highly mechanized forces" and that AirLand Battle "deals with these worldwide challenges." The influences of a threat from the Soviet Union are never absent, though. The insurgents are imagined as "Soviet-supported" and the mechanized forces are "typical of Warsaw Pact or Soviet surrogates;" see "Field Manual 100-5: Operations," (Washington DC: Headquarters, U.S. Army, 1986), 1-1. The Warsaw Pact is an informal name for a mutual defense agreement signed by Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, the Soviet Union, and Albania on 14 May 1955 and called the "Treaty of Friendship, Co-operation, and Mutual Assistance;" see Treaty of Friendship, Co-operation, and Mutual Assistance; No. 2962; U.N. Treaty Collection; Vol. 219; United Nations, https://treaties.un.org/doc/Publication/UNTS/Volume%20219/volume-219-I-2962-Other.pdf. NATO is a mutual defense alliance including the United States, Canada and 26 European nations, including Turkey. It consisted of twelve American and Western European nations at its founding in 1949; now it includes a substantial number of countries who were either formal Warsaw Pact signatories or members as part of the Soviet Union. Though the Pact has been frequently compared with NATO, David Yost criticized this "false parallelism" as ignorant of the reality that "the Warsaw Pact was a Soviet-organized body founded on coercion" rather than emerging "from a series of voluntary interactions between democratic nations in Europe and North America;" see David S. Yost, *NATO Transformed: The Alliance's New Roles in International Security* (Washington DC: United States Institute of Peace, 1998), 27-28.

apparent capability to quickly mass and invade the free states of Central Europe. AirLand Battle, after years of iteration, became a framework for a military response to that threat by the U.S. and its Western European partners in the NATO alliance.

Though it had a unifying effect across several organizations in the defense establishment, AirLand Battle meant different things to the various U.S. services and NATO allies. Pursuing a common concept allowed the services to advance joint warfighting concepts and enabled development of a common tactical vocabulary that impacted significant inter-service cooperation issues, useful both on the imagined battlefield and in the halls of the Pentagon. The advocacy and leadership that allowed AirLand Battle to become a dominant concept for more than a decade were part of a complex interaction. The kernel of the idea sprouted in response to the first-order threat of Soviet aggression and the sense of urgency this created in the national security community, but decisive leadership and initiatives from senior military figures served as its protective greenhouse until it matured. A succession of generals, at first working to repair the Army's image and ideological foundations after the Vietnam War, found a way to encourage service-wide debate about competing doctrinal concepts for war against the Soviet Union. After initially imposing concepts in a top-down fashion that led to vocal criticism, the service incorporated much of the criticism in a way that led to a widely accepted concept for warfare that could then be inculcated in the force through training and maneuver exercises. It also pursued a partner within the defense establishment to lend credibility and participation that could make the vision both conceptually and politically viable.

The successful shepherding of the AirLand Battle concept required more than just one service's participation. As the Army's process of internal debate sparked a U.S. strategy for an anticipated war in Central Europe, it reached out to the Air Force, its recently emancipated

younger sibling within DoD. The intellectual and doctrinal concepts offered by AirLand Battle met the needs of a plausible response to both the first-order Soviet threat, but as it grew it also satisfied several organizational preferences within the endogenous service strata, the meso-organizational Joint Chiefs of Staff arena, and the larger exogenous defense establishment. After this initial coalescence of interests made AirLand Battle the cognitive framework for how the U.S. and NATO would do battle in a conventional conflict with the Soviet Union and its allies, it took on another incarnation in a bureaucratic struggle over changes to the U.S. defense organizational structure. Anti-reform advocates briefly used AirLand Battle as proof that the Defense Department was capable of innovation and change from within, and did not require an exogenous forcing function in the form of legislation. The AirLand Battle concept became a way for an insular defense establishment to burnish its joint résumé as the defense reform caucus closed in and demanded that military failures and the excesses of defense acquisition be addressed by departmental reorganization.

AirLand Battle, along with other forms of DoD resistance, did not suffice to prevent defense reorganization, and major defense reform came to fruition in 1986 in the form of the Goldwater-Nichols Act. In a climate marked by growing fervor for change in the military establishment, along with studies showing that the Army was the least adroit among the services in explaining and advocating its agenda before Congress, this outcome is not surprising in its historical context.[218] However, the influence of AirLand Battle continued after defense reform

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[218] Stephen Scroggs' four conclusions from his study of Army relations with Congress summarize as follows: 1) Congress values liaison activity from the military services, 2) "the Army is viewed as the least effective in conducting this representational activity," 3) Army culture drives a sub-rational approach to relations with Congress, and 4) the culturally driven inarticulateness of the Army before Congress bodes poorly for U.S. security interests; see Scroggs, *Army Relations with Congress: Thick Armor, Dull Sword, Slow Horse*, 215. The Army has matured in its relations with Congress and its prowess with respect to public lobbying. Contrast Scroggs' description with the slickly produced, recent joint (the Army, the Marine Corps, and the U.S. Special Operations Command were sponsors) white paper advocating the Army's theory of military victory, distinguishing it from approaches that put stock in "standoff technologies and weapons," and how the services specialized for land warfare support U.S.

was legislated, and remained a driving force for defense organization, acquisition, and inter-service battlefield cooperation into the 1990s. Though combat on the European plains that had inspired its main ideas did not test AirLand Battle's mettle, those ideas did shape the way the U.S. fought its first and only major conventional conflict of that decade, the Persian Gulf War of 1991—a brief war that ejected the Iraqi Army from Kuwait. This conflict accompanied changing U.S. national security challenges and drove the balance of Air Force advocacy away from the principles of AirLand Battle, effectively ending its influence as the *leitmotif* for planning the organization, training, and equipping of U.S. military forces.

C. AirLand Battle's meaning: distinct among the services
1. AirLand Battle Eludes a General Definition
As useful as a formal definition of AirLand Battle would be at this point in the exposition, this work must suspend that offering for now and let it develop along with the process-tracing history of the next section. The basic meaning of AirLand Battle was and is truly in the eye of the beholder. Both Army and Air Force service histories are enthusiastic in their embrace of the cooperative inter-service atmosphere that led to AirLand Battle, but they develop different pictures of its precise nature. Emphasizing jointness, Richard Davis's 1987 summary for the Air Force History Office described it "as an example of bi-service harmony," "a case study of innovation," and a valuable template for "future Air Force leaders concerned about change within the service and about the background of bi-service relationships."[219] General Edward Meyer's signature alongside General Charles Gabriel's on the April 1983 inter-service memorandum formally introducing AirLand Battle as an organizing concept for joint training and exercising further develops the picture of jointness.[220] This does not mean that the Air Force

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national objectives; see Raymond T. Odierno, James F. Amos, and William H. McRaven, *Strategic Landpower: Winning the Clash of Wills* (Washington DC: Strategic Landpower Task Force, 2013), 3-5.
[219] Davis, *The 31 Initiatives*, 1.
[220] See Meyer and Gabriel, "Army-Air Force AirLand Battle MOU," 1.

viewed the notion of AirLand Battle with same weight as did the Army. While AirLand Battle

became *the* doctrinal and organizational construct of the Army, the Air Force never adopted it to

the same degree; it never achieved even the status of adopted doctrine within the tactical-air

organizations it affected most. Evidence suggests that the two services did not view AirLand

Battle as even the same *type* of epistemological construct, which makes the depth and breadth of

cooperation it drove all the more remarkable.[221] To establish one of the more substantial inter-

service barriers AirLand Battle had to overcome, a word about 'military doctrine' and what it

means to each service is in order.

2. The Service-Culture Lens of Military Doctrine
AirLand Battle influenced Army and Air Force doctrine when the two services started to work

together, but with differing effects because of the ways the two services view and develop their

essential organizing concepts. The question of doctrine and what it means to an individual

service requires analysis through a cultural lens.

a) *The Army: Doctrine is Malleable, but Novel Doctrines Become Guiding Principles*
If the meaningful measure is the possession of an ongoing, iterative process, no other service in

the modern U.S. defense establishment approaches the enthusiasm the Army has for doctrinal

creation. David Johnson claimed, "The Army captured the doctrine-writing process in the late

1980s," and this study found no significant disagreement among the services about this

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[221] The Army's overall effort to coordinate the ideas central to what would become the 1982 version of FM 100-5 suggest that the entire institution was wrestling with a major shift in doctrine; see, e.g., official history commentary in Anne W. Chapman et al., *Prepare the Army for War: A Historical Overview of the Army Training and Doctrine Command, 1973-1998* (Fort Monroe VA: TRADOC Military History Office, 1998), 1. Jack Kem emphasized that AirLand Battle was a 'universal' doctrine, applicable to all conflicts the Army would face, not just against the Soviet Union and Warsaw pact; Jack D. Kem (Supervisory Professor, United States Army Command and General Staff College), telephonic interview with the author, 20 May 2014. In contrast, the Air Force's embrace of the concept was narrower in terms of penetration into its primary doctrine document (which never included the words 'AirLand Battle,' though it did allude to the 'Tactical Air Command-Army team') and the institutional effort put into accepting the developments of the partnership with the Army as anything other than improved coordination procedures was negligible.

assertion.[222] William Lind added, "The Army has over a thousand doctrinal manuals, and the theory is—for any situation—if you just find the right book and the right page it'll tell you what to do."[223] Immersion in doctrine happens sooner in the Army than any other service, and the Army's tradition of doctrinal adherence runs the deepest of the services. As Robert Futrell described, the Army heritage hands down "age-old principles of war" derived from Napoleon, Clausewitz, and Jomini, among others, but it also revisits its doctrine with remarkable passion and frequency.[224]

A common remark to hear from an Army officer in a joint setting is, "That's not doctrine," and he will expect his audience to take the charge seriously—and to fix whatever perceived deviation has occurred.[225] Army doctrine addresses a wide range of topics, sometimes blurring a line between what is "doctrinal" and what are mere "tactics, techniques, and procedures" (TTPs), and provides readers with the exhortation that they "must understand the elements of doctrinal literature and their relationship to each other."[226] Army doctrine consists mostly of tactical reference manuals, but it also includes esoteric discussions about the nature of warfare and its relationship to strategy.[227]

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[222] Johnson interview, 24 February 2014.

[223] Lind interview, 1 July 2014.

[224] Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, 2 vols., vol. I, 1907-1960, (Maxwell Air Force Base: Air University Press, 1989), 6.

[225] This observation is based on my experience serving in a joint command dominated by Army officers along with various professional military education interactions.

[226] "Field Manual 3-21.20: The Infantry Battalion," (Washington DC: Headquarters, U.S. Army, 2006), xvii. The publication continues with a *caveat emptor* for its proper application: "The commonly used terms, tactics, techniques, and procedures are both interrelated and mutually supportive. However, each term has its own usage, level of detail, and place in the hierarchy of doctrinal publications. FMs provide doctrine, tactics, and some techniques, while mission training plans (MTP) provide techniques and procedures. Procedures can also be found in publications such as unit standing operating procedures (SOP) and Soldiers' manuals as well as others. Tactics, techniques, and procedures, in that order, become more prescriptive and require less judgment as these elements are applied. " The instructions for heating up an MRE [meal, ready-to-eat] may not be doctrine, but they are part of 'doctrinal literature,' which the Army defines with a low, wide bar. To be fair, most other services slip into the same traps with at least a few of their doctrinal publications.

[227] A comparison of the two service's respective broad-interest journals helps illustrate the distinction between the ways the two services treat doctrine. The Army's *Military Review* is given to the history of doctrinal development, spirited argument and debate about the nature of doctrine, and intricate discussions of its proper application. See,

The close relationship implied in Army manuals between doctrinal principles and specific tactical standards against which forces train and evaluate themselves is by design, and has its roots in General William DePuy's campaign for reform in the 1970s.[228] The importance the Army assigns to its four-star Training and Doctrine Command (TRADOC), as well as the sheer volume of professional articles published about the subject, testify to the very palpable importance of doctrine in the Army's professional culture that arose during his tenure. The Army puts its doctrine to regular practical use; an infantry officer, for example, will be familiar with the different field manuals associated with his profession and will have exercised the troops he leads according to their principles. Because they touch on a wide range of topics frequently affected by technological progress and changing style of fighting, the Army's doctrinal publications see frequent updating, maintained by incorporating headquarters guidance with 'lessons learned' gleaned through a robust feedback process and organizations. The Army's approach to doctrine makes the mechanisms of a continuously learning organization a requirement.

Though military writing often defines doctrine as more or less immutable principles of the 'nature' of war that do not shift as quickly as technology and other factors that set the 'character' of war, in practice the Army treats doctrine as a malleable artifact.[229] This contrasts with the Air

e.g., Clinton J. Ancker, III, "The Evolution of Mission Command in U.S. Army Doctrine, 1905 to the Present," *Military Review* 93, no. 2 (2013): 50-52; Geoff Demarest, "Let's Take the French Experience of Algeria Out of U.S. Counterinsurgency Doctrine," *Military Review* 90, no. 4 (2010): 19; Glen A. Henke, "Planning Full Spectrum Operations: Implications of FM 3-0 on Planning Doctrine," *Military Review* 88, no. 6 (2008): 99. The Air Force's *Air & Space Power Journal*, by contrast, typically provides dry introductions of little-read doctrine documents or entertains opinion pieces about how other services' (or joint) doctrine does not contain enough 'air-mindedness;' see, e.g. John L. Conway, III, "New USAF Doctrine Publication: Air Force Doctrine Document 2-10, Homeland Operations," *Air & Space Power Journal* 21, no. 1 (2007); Charles J. Dunlap, "Air-Minded Considerations for Joint Counterinsurgency Doctrine," *Air & Space Power Journal* 21, no. 4 (2007).

[228] David Johnson said, "Army doctrine really starts with Bill DePuy as the TRADOC commander;" Johnson interview, 24 February 2014.

[229] This is not to say that the Army does not have dearly held beliefs that surface in its doctrine. Its publications come out swinging with respect to its view of the primacy of land forces in winning wars. "No major conflict has ever been won without boots on the ground. Strategic change rarely stems from a single, rapid strike, and swift and

Force's and Navy's approaches to doctrine, which, while giving it less frequent visible attention, also treat it with less variability. As Samuel Huntington explained, the Navy had a well-established strategy predating WWII.[230] The Air Force's push for self-justification using doctrinal means temporarily jostled the Navy's Mahanian confidence, but it rapidly righted itself by completely assimilating carrier air power into its ideas of maritime power projection. Writing in 1992, Thomas Cardwell noted that "the naval services do not have, like the U.S. Army and U.S. Air Force, basic or capstone doctrine," going on to clarify that they did make "doctrinal pronouncements" that provided clarity on the naval viewpoint for joint warfare.[231] (Though both the Navy and the Marine Corps have since written capstone doctrinal publications, Cardwell's observation helps establish a helpful spectrum of importance across which the services fall in acknowledging the importance of doctrine.)[232]

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victorious campaigns have been the exception in history." Further taking aim at the doctrinal claims of the Air Force and Navy, ADP 1 labels human beings as "interlopers" on the sea, in the air, and in outer space, but stresses the ability of soldiers to interact and manage populations among the chaos of human affairs; see "Army Doctrine Publication 1 (Field Manual 1): The Army," (Washington DC: Department of the Army, 2012), 1-1, 1-4. If one reads the various service capstone doctrinal publications in parallel, it is easy to imagine that a shouting match of service zealots would sound similar themes.

[230] Huntington wrote, "Prior to the 1930s, doctrine was reasonably well developed in the Navy, less so in the Army;" Huntington, *The Common Defense: Strategic Programs in National Politics*, 399.

[231] Cardwell, *Airland Combat*, 52.

[232] Many interviewed on the topic of doctrinal adherence, among them David Johnson, Jack Kem, Wray Johnson, and Paul Van Riper; placed the Army highest on the spectrum and the Navy last, with the Air Force and Marines trading places in the middle spots. Kurt Cichowski also noted in 1992 that aside from "specifying the details of fleet tactics, the U.S. Navy does not publish formal doctrine;" see Kurt A. Cichowski, *Doctrine Matures Through a Storm: An Analysis of the New Air Force Manual 1-1* (Maxwell Air Force Base Alabama: Air University Press, 1993), 39. After 1994, with the publishing of a series of Naval Doctrine Publications, this charge is not strictly true, though the Navy still places more emphasis on baseline tactics and "strategic documents" (theories of sea power projection and the various statements of national strategy figure prominently in the Navy's public dialogue and what it promotes among its online resources) than it does on the promulgation of doctrine *per se;* see "Naval Doctrine Publication 1: Naval Warfare," (Washington DC: Department of the Navy, 1994); "Strategic Documents," U.S. Navy, accessed 29 March 2014, http://www.navy.mil/StrategicDocs.asp. An observer of service doctrine well-positioned to comment, but who wished to remain anonymous on this point, remarked on the relatively low impact doctrine has on the behavior of the U.S. Navy, "The Navy still says, 'Write whatever doctrine you want; the Captain's going to do what he's going to do.'" A naval officer who was willing to go on record reflected the same sentiment, arguing that the Navy is more motivated by strategic documents and specific tactical procedures; doctrine does not receive the attention or impassioned debate that it does in the Army; Thomas Hall (Lieutenant Commander, USN), personal interview with the author, 31 March 2014.

b) The Air Force: Doctrine is Immutable; Operational Concepts form a Basis for Cooperation
An outsider might make an informed guess that Air Force has relatively less interest in doctrine

than does the Army since it has a self-defined dependence on ever-changing military technology.

Doctrinal manuals released after the service attained its independence give the same

impression.[233] Carl Builder has argued that the Air Force slipped away from the original

doctrinal and strategic arguments that drove its quest for independence.[234] As described earlier in

comparison to the Army, the Air Force places less emphasis on the act of writing doctrine. There

is no four-star equivalent to the TRADOC commander; typically, colonels with independent

charters write doctrinal revisions that do not elicit the passion of similar Army missives.

Lack of high-level activity does not necessarily belie disinterest or insecurity, though. The

call for periodic review of doctrine quickly faded, and an idea that the Air Force had created—or

believed it had created—an "infallible doctrine" has appeared in some analyses.[235] The service

tends to make few substantive changes to the foundational ideas in its capstone doctrinal

publications, and has not altered its priorities for air missions since the 1930s. Frequent

statements about doctrine appear, but their purpose appears to be that of educating others about

received truth rather than to grapple again with fundamental questions of existence in the manner

of the Army. In 1979, critics of the Air Force's latest doctrinal publication critiqued its slick

presentation as evidence that it was more of a public relations campaign than any serious attempt

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[233] The first edition of Air Force Manual 1-2 stated, "The dynamic and constant changes in new weapons makes [*sic*] periodic substantive review of the doctrine necessary;" see "Air Force Manual 1-2: United States Air Force Basic Doctrine," (Washington DC: Department of the Air Force, 1953), ii.

[234] This is the theme of Builder's *The Icarus Syndrome*. He asserted, "The Air Force has lost its sense of vision, but it has a strong affinity toward re-establishing one;" Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (New York: Transaction Publishers, 2002), 23.

[235] See Rudolph F. Wacker, "Managing the Infinities of Basic Doctrine" (Research thesis, Air Command and Staff College, 1967), 49-50. Futrell noted that revisions of AFM 1-2 dropped calls for "periodic substantive review" found in the 1953 manual; see Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, 2 vols., vol. II, 1961-1984, (Maxwell Air Force Base: Air University Press, 1989), 711.

at intellectual engagement of doctrine.[236] In short, an insider's perspective might suggest that the

service has not drifted away from its doctrinal roots, but rather they have grown so deep that they

anchor the service whether it discusses them openly or not.

This assertion begs description of what the Air Force's central doctrinal idea is. At some

level, it might appear that the Air Force has evolved from ideas of strategic bombing (1930s and

WWII), through nuclear deterrence (Cold War), to a conceit that precision weapons delivered by

air platforms can end wars quickly (Gulf War, Balkans). A thorough discussion would mention

the service's eternal hope in the power of emerging technology to deliver on the promises of

history's air power theorists. It would also discuss the controversial "Effects-Based Operations"

(EBO) concept, a recent development that attempts to separate what air power can do from the

systems that do it.[237] In reality, though, these are peripheral topics in an ongoing discussion that

has witnessed air power advocates, theorists, and zealots alike holding true to a few core

concepts:

1) Air power is a unique form of military power whose effects transcend the usual constraints of
war, providing strategically decisive effects in the pursuit of political goals, military campaigns,
and engagements—sometimes without the use of other types of military power;

2) The inviolability of a single air commander's centralized control of unified *theater* air power
is to be guarded against any effort to parse limited air assets out among competing lower-echelon
commanders—air power must be commanded centrally by someone, an "Airman," intellectually
empowered to understand it; and

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[236] WIlliamson Murray, "A Tale of Two Doctrines: The Luftwaffe's Conduct of the Air War and the USAF's Manual 1-1," *The Journal of Strategic Studies* 6, no. 4 (1983): 89. See also Futrell, *Ideas, Concepts, Doctrine Vol. 2*, II, 1961-1984, 735.

[237] EBO attracted the wrath of Marine Corps General James Mattis during his tenure as the commander of the now-defunct Joint Operations Command; he described it as an oversold attempt to give the complexity of combat "acute predictability," and ordered the term and related verbiage banned from all joint publications over which he had authority; see Assessment of Effects Based Operations; U.S. Joint Forces Command, Norfolk VA, 1-2, 6. A service-centric interpretation of EBO could conclude that it is an attempt to retrench centralized control back to the Air Force, and that the conflict over EBO represents the ongoing fight between the Marine Corps and Air Force about how to control air assets. A requirement that commanders specify the "effects" they require rather than the platform needed to achieve a given effect tends to give a theater commander more flexibility and land component commanders less ability to appropriate platforms for their exclusive use.

3) Air superiority is of first importance in any campaign, for with it the actions to attain ultimate victory are possible.[238]

David Mets' summaries of air power theorists shows that these core doctrinal statements reflect an extension of similar historical ideas. Guilio Douhet argued that after seizing air superiority, strategic bombing against "vital centers" could bring about a "humane victory."[239] Hugh Trenchard also argued that "vital centers" were the key to victory, as bombing them would break the enemy's will.[240] Billy Mitchell emphasized the superiority of the Air Force over other military services, arguing that it provided both a superior means of homeland defense and that striking "vital centers" could bring about quicker, more humane, victory against an enemy "without first defeating his armies and navies."[241] John Warden's "Ring Theory" incorporated and expanded several of the earlier theorists' claims, but retained an assertion that air power could "function independently to achieve decisive effects" as a central theme.[242] Throughout its history, the primacy of air superiority—the concept that the friendly force must have unfettered use of the air domain and must be able to deny the enemy force similar access—has been an unshakeable element of core air power doctrine. Though some, including retired Lieutenant General Kurt Cichowski, have described as "revolutionary" periodic revisions of fundamental

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[238] The 2011 Air Force Doctrine Document 1 was the service's capstone doctrinal publication at this writing. Though it is more subdued in tone than previous editions, in parallel with the description offered in the text, it makes the following claims about air power: 1) "Airpower operates in ways that are fundamentally different from other forms of military power" and "Airpower has a degree of versatility not found in any other force." 2) "Airpower is an inherently strategic force;" "The Air Force provides national leadership and joint commanders with options, the threat of which may accomplish political objective without the application of lethal force;" and "airpower can simultaneously strike directly at the adversary's centers of gravity, vital centers, critical vulnerabilities, and strategy." 3) "The perspective of Airmen is necessarily different; it reflects a unique appreciation of airpower's potential, as well as the threats and survival imperatives unique to Airmen" and "Airpower's unique characteristics necessitate that it be centrally controlled by Airmen." See "Air Force Doctrine Document 1: Air Force Basic Doctrine, Organization, and Command," (Washington DC: Department of the Air Force, 2011), 14-20. EBO gets a veiled nod on page 20 as well.
[239] David R. Mets, *The Air Campaign: John Warden and the Classical Airpower Theorists* Revised ed. (Maxwell AFB AL: Air University Press, 1999), 12.
[240] Ibid., 22.
[241] Ibid., 34.
[242] Ibid., 59.

Air Force doctrine, the central tenets of what the service maintains as its *de facto* essential doctrinal beliefs have held constant since the 1930s and are enumerated in the preceding list.[243]

On the whole, the tenor and tone of air power theorists' ideas are remarkable for their exclusivity and audacity. The first real doctrinal contribution these ideas made, as reflected in the 1943 version of Field Manual (FM) 100-20, *Command and Employment of Air Power*, was simply to assert the claims outlined about air power's unique utility and a requirement for centralized control under a specially trained leader.[244] Cichowski noted that Air Force doctrine has matured since the days of "Douhet, Mitchell, and the instructors at ACTS" who believed "[a]ir power alone…was sufficient to win wars," and has "correctly place[d] aerospace forces in warfare's context."[245] This is true to an extent, but the most influential air power theorists have never willfully accepted a subordinate role for air power, and their worldview has been a constant thread in U.S. Air Force doctrine. If not done with care for the sensibilities of one's audience, merely stating the central, historical ideas of air power theory can sound so arrogant, particularly from the perspective of other services, that a sense of tact may keep many an Airman from articulating them out loud.[246] An alternate explanation for why Builder saw evidence of doctrinal decline in the Air Force was that its underlying doctrinal stances are an invisible monolith, so tightly interwoven into the institutional fabric that they need not be repeated regularly. Though Jeffrey Donnithorne characterized the service as one of a pair that has to constantly justify its independent existence (the Marine Corps is the other), the constancy of its

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[243] Cichowski, *Doctrine Matures Through a Storm*, 19.
[244] FM 100-20 (1943) says, "[the] inherent flexibility of air power is its greatest asset. This flexibility makes it possible to employ the whole weight of available air power against selected areas in turn. Control of available air power must be centralized and command must be exercised through the air force commander;" "Field Manual 100-20: Command and Employment of Air Power," (Washington DC: War Department, 1943), 16.
[245] *Doctrine Matures Through a Storm*, 49.
[246] Mets indicates that senior Air Force leaders' chagrin over John Warden's self-assurance in advancing his theoretical ideas may have terminated his military career before its time; see Mets, *The Air Campaign*, 58.

doctrine through its history—short though that history may be—suggests the Air Force has remained steadfastly confident in *what* it should do and *why* it exists.[247]

The Air Force's deep-seated doctrinal confidence does not mean that it occasionally does not feel itself on the losing end of national debate about what its doctrine *should* be. When questioned by Congress or other critics who may not understand the simple cunning of its enduring air power tenets, the service most assuredly does feel compelled to publicly justify its contributions to national defense and war efforts. As Andrew Abbott wrote, "the most familiar arena for professional claims is public opinion. In America it is ultimately through public opinion that professions establish the power that enables them to achieve legal protection," meaning that internal arguments alone will never suffice, and that public engagement about the utility of services provided is an enduring reality for all military services.[248] The most recent, perhaps groveling, example of this happened well into the recent conflict in Afghanistan, and receives treatment in Chapter 5. In these instances, Air Force public relations campaigns tended to address metrics like number of missions flown, bombs dropped, and personnel wounded. The numbers emphasize danger, 'boots-on-the-ground,' and an 'in-the-mud' combat focus, reflecting the insecurity the Air Force feels when the Army and Marines get attention for their handling of risky missions that lead to individual examples of heroism. The insecurity is perhaps well placed because the larger U.S. defense establishment is unique in the attention it gives to the messier forms of combat, irrespective of their contribution to national goals.[249] An argument about the Air Force's *raison d'être* rarely arises from an internal voice, though frequent calls for the Air

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[247] "The Air Force, like the Marine Corps, has a reason-for-being that is contingent and not imperative. That is, there is no *a priori* reason why air forces must be separate from land and ground forces—such separateness has to be articulated, justified with logic and evidence, and sustained through empirical evidence of its value;" Donnithorne, "Principled Agents," 227-28.

[248] Abbott, *The System of Professions*, 60.

[249] See Lexington, "Medals for Drone Pilots?," *The Economist*, 29 March 2014, 33. http://www.economist.com/news/united-states/21599785-fraught-debate-over-how-honour-cyber-warriors-medals-drone-pilots.

Force's abolition come from outside the service.[250] Perhaps the Air Force's lack of recurring, articulated existential justification drives some form of reverse psychology in the Army, or perhaps it is simple embarrassment over its younger sibling's brashness. Either way, spokespersons for the "indispensably needed" continental service are wont to assert its own reasons for existence from time to time, even if no one is asking them to.[251]

Because the Air Force, its own existential confidence aside, must at times engage in public debate about its doctrine to stay politically relevant, criticism of its shortcomings in this arena periodically reveals doctrinal gaps for which it must seek remedy. These criticisms commonly arise over the questions of air support to land forces, and give the service a reason to concentrate on 'support functions' that would not otherwise make a short list of essential doctrinal concerns. For the Air Force, AirLand Battle grew out of the Tactical Air Command's (TAC) significant involvement with TRADOC, a relationship conceived by General DePuy when he was the latter organization's first commander. For the younger service, however, AirLand Battle never rose to the status of an all-encompassing doctrine; it remained an operational concept.

For as much utility as AirLand Battle had for the Air Force—and it did have great use as an organizing, training, and equipping concept—there is some adamancy within the service that AirLand Battle was never an Air Force "doctrine," even as broadly applied as that term is at times.[252] The Air Force throughout its short history has simply been too confident, too immutable

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[250] See, e.g., Robert M. Farley, "Ground the Air Force: Revising the Future of Flight," *Foreign Affairs* (Internet)(2013): 1.

[251] Reflecting "an arrogance or trust that external audiences should or will recognize the merit of the Army cause," a former Army Chief of Staff said, 'There has always been an Army. The Army is a product of the people of this country. The Army wins the wars of our nation. We don't have to justify the need or relevancy of an Army. America requires an Army. The other services have to justify themselves in terms of their platforms or weapon systems…There will always be an Army;'" quoted in Scroggs, *Army Relations with Congress: Thick Armor, Dull Sword, Slow Horse*, 123.

[252] David A. Deptula (Lieutenant General (ret.), USAF; former Director, Combined Air Operations Center, Operation Enduring Freedom (2001); former Air Force Deputy Chief of Staff for Intelligence, Surveillance and Reconnaissance (2006-2010)), personal interview with the author, 5 December 2013.

in the doctrinal concepts to which it holds fast, to seek a new definition of the way it fights even in the face of extreme changes in the 'grammar' of war.[253] If anything, successive sets of grammatical rules, increasingly informed as they are by technology, seem to drive the service asymptotically closer to the vision of precision and instantaneous strategic effect about which ACTS planners dreamed at Maxwell Field in the 1930s. The current Air Force Chief of Staff, General Mark Welsh, summarized what may be interpreted as an Air Force-stereotypical view of AirLand Battle when he compared it to the contemporary Air-Sea Battle concept:

Air-Sea Battle is nothing more than a way of thinking. For those of you who remember AirLand Battle back in the early '80s and beyond, it was just a kind of a conscious approach to [the problem], 'How do you make the Army and the Air Force work better together?' When I was flying A-10s back in those days, we couldn't talk on a radio to the Army tactical operations center for the unit on the ground. We didn't share radio frequencies. We had an FM radio, but it didn't work very well with theirs. We couldn't speak in a secure means at all. And so, that was one of the objectives of AirLand Battle: to talk to each other— you know, create the technology, the equipment, the tactics so you could communicate.[254]

This characterization is a revisionist portrayal of the Air Force viewpoint, and it greatly downplays the significance of the construct the Army believed it had created in making AirLand Battle its official doctrine. It also indirectly illustrates the dismissive attitude the corporate Air Force maintains toward new doctrines. However, the breadth and depth of cooperation that took place in the name of AirLand Battle suggests that both services assigned it substantial *gravitas* in its era.

As this study of AirLand Battle unfolds, it distinguishes the nuances with which the Army, the Air Force, and, when applicable, the Navy and the Marine Corps viewed the concept. Since the services agreed about several areas centering about their mutual cooperation in developing the idea, points of friction and division about the concept remained muted throughout its lifespan.

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[253] One of Clausewitz' fundamental arguments was that the 'logic' of war in advancing national policy did not change (it always tends toward the utter violence of a duel, modified by the political interests in play), but that the grammar (i.e., the means and styles with which it is waged) are constantly in flux because of those limitations; see Clausewitz, *On War*, 75, 87, 605.

[254] Mark A. Welsh (General, USAF; U.S. Air Force Chief of Staff), remarks at the Center for Strategic and International Studies, 27 March 2014.

These differences came fully into view, though, when prominent shapers of opinion in the Air Force repudiated AirLand Battle after the Gulf War, marking the beginning of its demise as a significant source of inter-service cooperation and beginning a new search for the rallying cry of jointness. In spite of the services later distancing themselves from AirLand Battle, there is little doubt that it and the efforts predating it built trust between the Army and the Air Force and provided a common vision for how air and land power would fight together in a conflict between superpowers.

II. A History of Army-Air Force Cooperation on AirLand Battle

Tracing the history of AirLand Battle as it developed to be a cooperative joint effort requires going one step prior to AirLand Battle in the Army's doctrinal evolution. The service's efforts to reinvent itself and focus on a new security problem after the discouragement and ignominy of the Vietnam conflict were the roots of the concept.

A. Changing Security Climate

The story of AirLand Battle began with a sea change in the strategic perspective with which the U.S. and its allies viewed the world after Vietnam. In the 1950s, the projection of strategic power was an organizing tenet for U.S. foreign policy, military doctrine, and military strategy. The major national security ideas of the 1950s and 1960s centered on checking the influence of the Soviet Union, providing an ideological response to Communism, and more often than not acknowledged the possible use of nuclear arms.[255] Eisenhower's New Look, massive response, and "balance of terror" gave way to Kennedy's Flexible Response and "assured destruction."[256]

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[255] "After the end of World War II, the United States came to rely on superior weapons, primarily the nuclear bomb and its delivery systems, to offset numerical advantages in personnel and material held by the Soviet Union and Communist China;" see Walter S. Poole, *Adapting to Flexible Response 1960-1968*, ed. Glen R. Asner, vol. 2, History of Acquisition in the Department of Defense (Washington DC: OSD Historical Office, 2013), xi.

[256] President Dwight Eisenhower's "New Look" defense strategy was marked by caps on defense spending and a heavy reliance on nuclear retaliation as a means of deterring aggression; see Weigley, *The American Way of War: A History of United States Military Strategy and Policy*, 411. In contrast, President John Kennedy's "Flexible Response" maintained the concept of nuclear deterrence, albeit through more nuanced means, and developed the concept of the nuclear triad of alert-status bombers, land-based missiles, and submarine-launched missiles. Kennedy

These concepts and the policies they inspired raised the stock of the respective nuclear power-projection branches of each service. By the 1970s, the ideal of containment that had governed U.S. responses to Soviet territorial grabs was waning, giving way to Nixon's *realpolitik*-based *détente* in the wake of Vietnam. Carter's foreign policy promoted human rights as an ideological counter to Soviet aggression until the invasion of Afghanistan in 1979 caused a temporary reversion to containment.[257]

The changing viewpoint of security elites also impacted the military. Henry Kissinger noted that all of the services' mid-1950s congressional budget hearings emphasized their strategic and long-range power-projection capabilities, even at the expense of more traditional military capabilities.[258] Kissinger saw the inter-service rivalry driven by this tendency as well: "The more the other services have extended the range and power of their weapons, the more closely they have approached what the Air Force considers its primary mission, thus opening the

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also began to expand the conventional capacity of the U.S. military, and took particular interest in its capability to wage irregular, or limited-scope, warfare; see ibid., 442-46. Secretary of Defense James Schlesinger commissioned an external study of nuclear deterrence policy in 1974, as he believed that there was a "lack of sufficient historical knowledge and analysis of the strategic arms competition" that had hampered Defense Department discussion and, ostensibly, decision-making through the era; see History of the Strategic Arms Competition 1945-1972; Top Secret Report (declassified); Nuclear Arms and Politics in the Missile Age, 1955-1968; U.S. Nuclear History; National Security Archive, George Washington University, vii. The report's description of historical ignorance shows that the military establishment, while reacting to the importance its exogenous masters placed on nuclear deterrence theory and policy derived from it, may not have understood many of the nuances those theories or policies entailed.

[257] By way of example, a Kissinger speech in 1976 emphasized the Nixon-Ford administration's termination of the Vietnam conflict and couched it as an effort to provide a buffer "of security and time" to developing East Asian nations who needed a chance to develop economically and shore up international institutions; Henry A. Kissinger, "Building an Enduring Foreign Policy: Creative Leadership in a Moment of Uncertainty," in *Vital Speeches of the Day* (1976), 170. This was in sharp contrast to the original justification given for involvement in the conflict, which was containment of Communism. Again turning to Kissinger, we find a succinct statement of reasons for the Kennedy-Johnson administration's approach to Vietnam: "Like its predecessors of both parties, [the Kennedy administration] assumed containment to be indivisible and the domino effect of the collapse of South Vietnam to be a kind of natural law. Goldstein, Bundy, and his senior colleagues defined the domino effect as involving the Philippines, Thailand, Japan, Malaysia, Indonesia, South Korea and Taiwan. The new Kennedy administration even added a philosophical refinement. Vietnam was no longer treated as one of many fronts in the global cold war but as the central front. Conventional aggression having been stymied by NATO, guerrilla warfare needed to be similarly frustrated in Vietnam. China and the Soviet Union were perceived as part of a joint enterprise to tip the global equilibrium;" see "What Vietnam Teaches Us," *Newsweek*, 3 November 2008, 45.

[258] For example, the Army emphasized its medium range missiles "as much as the subtler applications of its power" and the Navy emphasized the power projection capability of carriers over its "less dramatic anti-submarine role;" see *Nuclear Weapons and Foreign Policy* (New York: Harper & Bros., 1957), 20.

way to endless jurisdictional disputes."[259] He also critiqued the uneasy truces under which the

services operated and the chilling effect this had on developing a national 'strategic doctrine,'

which he hoped would issue from the Joint Chiefs of Staff and the National Security Council.[260]

The two decades after WWII witnessed burgeoning attention on strategic weapons, with

the Air Force's budget share rising as high as forty-eight percent in 1957 at the height of the New

Look—a direct reflection of the service's prominence in the nation's nuclear deterrent.[261] The

Key West agreement established the Strategic Air Command (SAC) as a specified command

under the Joint Chiefs and made the Air Force chief of staff its executive agent.[262] Globe-

shrinking long-range bombers and the emphasis on nuclear deterrence through a survivable first-

strike capability established SAC and its fleet of alert aircraft as a dominant defense organization

during the era.[263] Inter-continental ballistic missiles (ICBMs) and medium-range nuclear missiles

deployed to Europe solidified this dominance for several years. According to its own people, the

Army was somewhat absorbed by self-pity in this milieu.[264] The Navy's struggle to develop fleet

ballistic missiles, wresting away one leg of the nuclear triad from the Air Force, and a gradual

return to more emphasis on conventional military capability—including more capacity to wage

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[259] Ibid. For its part, the Air Force's doctrinal efforts of the late 1950s and early 1960s involved a territorial grab of its own. Coining the term "aerospace" to define a "continuous operational field in which the Air Force must function;" the service asserted its influence over a new domain using rhetorical tactics that met with equal parts admiration and derision from Congress and others; see Senate, *Investigation of Governmental Organization for Space Activities*, 86th Congress, 1st session, 1959, 353. Representative Daniel J. Flood objected to the domain grab he felt the new term implied: "That means everybody is out of space, and the air except the Air Force;" see House, Subcommittee of the Committee on Appropriations, *Department of Defense Appropriations for 1960*, 86th Congress, 1st session, 1959, 579.

[260] *Nuclear Weapons and Foreign Policy*, 237-38.

[261] Kevin N. Lewis, *The U.S. Air Force Budget and Posture Over Time* (Santa Monica CA: RAND, 1990), 15.

[262] Futrell, *Ideas, Concepts, Doctrine Vol. 1*, I, 1907-1960, 200.

[263] See, e.g., Futrell's account of SAC influence on the overall defense budget in 1960-61 as it claimed a need for one-fourth of the B-52 inventory to be on alert to maintain a sufficient nuclear deterrent—a response to the day's alleged "missile gap" with the Soviet Union; ibid., II, 1961-1984: 8-10.

[264] For example, General DePuy said, "Eisenhower was the President, and massive retaliation was the strategy. The Air Force was riding high. The Army was feeling sorry for itself. Because Ike thought that he knew all about the Army, it was getting short shrift. The Chairman of the Joint Chiefs was Admiral Radford. Admiral Radford, I think, despised the Army even more than most admirals;" Romie L. Brownlee and William J. Mullen, III, *Changing an Army: An Oral History of General William E. DePuy, USA Retired* (Washington DC: U.S. Army Center of Military History, 1979), 112.

irregular war—served to drive the defense budgets back toward the relative inter-service parity observed since the 1970s.[265]

The preoccupation with nuclear arms waned as security problems repeatedly emerged in the developing world that differed from the blatant Soviet aggression envisioned by strategists. By the mid-1970s, the intellectual framework for U.S security had drifted away from the post-WWII perspective. The immediacy of unlimited nuclear war, along with a singular focus on reducing its likelihood through carefully calculated deterrent capabilities, began to fade. The emerging security outlook also put less emphasis on containment-inspired 'brushfire wars' epitomized by Korea and Vietnam. Waxing, however, was the possibility of significant conventional engagement in Europe with the Soviet Union, which in the eyes of the West had also come to fear the oblivion of thermonuclear war. If the Soviet Union seemed to accept the strategic futility of a nuclear exchange, its ambitions for influence and territory in its near abroad still filled NATO's front window, whose view to the east witnessed an array of Warsaw Pact satellite states. These international geopolitical trends duly influenced the military services, who studied intelligence reports and the remarks of the international relations intelligentsia as a stockbroker might examine a firm's quarterly results: carefully, repeatedly, and with an aim to prognostication from old data.

B. 1973-1976: Growing a Sense of Urgency
The Army's official history of TRADOC identified General Donn Starry as the driving force behind AirLand Battle, but it attributed the post-Vietnam innovations in the doctrine of land

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[265] From 1970 through 1988, the services' overall budget percentages stayed in a range between 25 and 35 percent of the total defense outlay, with the Air Force and Navy in an approximate band between 30 and 35 percent, and the Army between 25 and 30 percent. However, spending by DoD and the Office of the Joint Chiefs of Staff has grown steadily over time, reducing the amount of overall defense funds available to the individual services; see Lewis, *The U.S. Air Force Budget and Posture Over Time*, 13-15. The conspicuous attention on nuclear weapons from the exogenous defense and security establishment offers a complementary explanation to accompany Owen Cote's exposition of inter-service rivalry as the prime cause for the Navy's innovation in developing *Trident*; see Coté, "The Politics of Innovative Military Doctrine." This is an example of equifinality, which this work strives to keep in view in offering explanations for joint cooperation.

warfare that the Army pursued to General DePuy.[266] DePuy's analysis of both the U.S. Army's

experience in Southeast Asia and the Israeli experience in the 1973 Mideast War caused him to

make significant changes in the way his institution thought about and prepared for war.[267] John

Romjue speculated that significant changes in Army doctrine were "bound to come" after

Vietnam, but DePuy's strong opinion that the existing body of training literature the Army used,

because of the increased lethality of new weapons systems, had "ceased to be valid on the

modern battlefield" seems to have pushed its reformulation along without delay.[268] DePuy

received unadulterated credit for laying a foundation for what would become AirLand Battle, and

he also set in place its trusses of inter-service cooperation.[269]

1. 'Active Defense:' A New Capstone Doctrinal Concept
The thinking, doctrine, and strategy that came to be known by 1976 as 'Active Defense' grew

out of operational concepts and military doctrine developed by the TRADOC as part of an

ongoing process of thought development with roots in the post-Vietnam Army of 1973. In the

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[266] See John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, ed. Henry O. MaloneTRADOC Historical Monograph Series (Fort Monroe VA: U.S. Army Training and Doctrine Command, 1984), 4-11; "The Evolution of the AirLand Battle Concept," *Air University Review* (1984): 6. Singular claims of influence should be weighed against the Army's institutional tendency to quickly and intentionally lionize individuals, particularly senior leaders, absent an objective measure of their full contributions. Donnithorne's description of Army culture notes an institutional self-perception that "[e]fforts at reform, change, or rehabilitation within the Army typically begin, therefore, with the individual soldier," even though the institution's rigid hierarchical structure demands consensus building and limits the changes any single individual can make; see Donnithorne, "Principled Agents," 221.

[267] DePuy thought a great deal about the 1973 war, as reflected in a prodigious amount of written material he produced about it. An early summary memorandum highlighted many of the themes that would influence active defense, but the fact that all seven of his "Major Lessons Learned" refer directly to air-ground combat relationships gives him a rightful claim to be the intellectual progenitor of AirLand Battle as early as 1974, even if the term would not emerge for another seven years; see Letter to General Creighton W. Abrams, Jr. (analyzing the Arab-Israeli War); Arab-Israeli War, 1973; Box: Deputy CG TRADOC; The Orwin C. Talbott Papers; U.S. Army Military History Institute, Carlisle Barracks PA, 2-3. Letter is reprinted in Richard M. Swain, ed. *Selected Papers of General William E. DePuy* (Fort Leavenworth KS: Combat Studies Institute, 1994), 69-74. Robert Leonhard, though his objectivity might be slightly impeached by his service as an Army officer, does not lionize DePuy's contribution to maneuver warfare, but does credit his leadership with initiating "one of the most influential doctrinal pivots of the U.S. Army" in its adoption of Active Defense; see Robert R. Leonhard, *The Art of Maneuver: Maneuver-Warfare Theory and AirLand Battle* (Novato CA: Presidio Press, 1991), 130.

[268] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 3-4.

[269] In the Air Force official history of AirLand Battle cooperation, Davis asserts, "Without the foundations laid by the TAC-TRADOC dialogue [started under DePuy in 1973], the 31 Initiatives might never have occurred;" see Davis, *The 31 Initiatives*, 33.

Army historical narrative of AirLand Battle, the formation of the service's guiding doctrinal statement was a two-phase process that began when DePuy, TRADOC's "father" and first commander from 1973 to 1977, responded to the malaise and insecurity of the Army following Vietnam.[270] He seized upon the growing threat in Europe as a mechanism with which to motivate the Army.[271] He believed that prescriptive guidelines, promulgated as "how-to-fight manuals," would re-instill discipline and confidence in an institution that had seen both qualities shattered during its involvement in Southeast Asia.[272, 273]

DePuy did not invent the idea of Soviet menace to advance his agenda; it was a first-order threat, the scope of which was established by government executives, intelligence analysts, and other security experts inside and outside the military establishment. Along with its shifting assessment of containment policy and the viability of nuclear deterrence described earlier, this community weighed the emerging capacity behind the Iron Curtain against the relative stasis and downsizing happening in Western militaries. Studies, such as the one undertaken by the Congressional Budget Office in 1976, acknowledged the difficulty of assessing NATO against

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[270] Chapman et al., *Prepare the Army for War: A Historical Overview of the Army Training and Doctrine Command, 1973-1998*, xv.

[271] See, *inter alia*, Richard Lock-Pullan, "'An Inward Looking Time:' The United States Army, 1973-1976," *The Journal of Military History* 67, no. 2 (2003): 488. DePuy, realizing the Army's recent inexperience with major combat operations while unabashedly casting off the ignominy of Vietnam, wrote, "in recognition of the fact that the entire United States Army, from Private to General, needs to focus on a form of combat in which the Army of today has not battlefield experience. In a sense, this manual takes the Army out of the rice paddies of Vietnam and places it on the Western European battlefield against the Warsaw Pact;" William E. DePuy, "Talking Paper on Field Manual 100-5, *Operations*," in *Selected Papers of General William E. DePuy*, ed. Donald L. Gilmore and Carolyn D. Conway (Fort Leavenworth KS: Combat Studies Institute, 1994), 194.

[272] See, e.g., Paul H. Herbert, *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 10-5, Operations*, vol. 16, Leavenworth Papers: Combat Studies Institute, 1988), 7. DePuy, in his own words, equated "doctrine" with "how to fight;" Brownlee and Mullen, *Changing an Army: An Oral History of General William E. DePuy, USA Retired*, 187.

[273] DePuy's own influence in Vietnam did not evoke admiration from prominent defense reform figures working in Congress. William Lind said of him, "He was very forceful, very dominant, and got everything wrong." Lind cited DePuy's influence in shifting General William Westmoreland's strategy from the Marine- and Special Forces-led 'inkblot strategy' in the coastal lowlands to fighting Viet Cong "decoy units" in the highlands (using conventional Army units) as a major reason the U.S. "lost the war. This is a guy who over a decades-long career—and his influence is still very real in the Army today—got everything wrong. He thought he understood the Germans, but he had them 180-degrees wrong;" Lind interview, 1 July 2014.

the Warsaw Pact, but identified risk in an offensive assault against NATO forces along the Central Front that separated West Germany from Eastern Europe.[274] Herbert London, compiling figures from DoD comparisons performed in 1984, defined a stark imbalance: 93 NATO divisions against 176 Warsaw Pact Divisions; 14,400 tanks to face 42,600; and a mere 11,500 artillery tubes to square off against 35,000.[275]

The Chinese strategist Sun-Tzu wrote a maxim about the utility of desperation:

Throw the troops into a position from which there is no escape and even when faced with death they will not flee. For if prepared to die, what can they not achieve? Then officers and men together put forth their utmost efforts. In a desperate situation they fear nothing; when there is no way out they stand firm. Deep in a hostile land they are bound together, and there, where there is no alternative, they will engage the enemy in hand-to-hand combat. Thus, such troops need no encouragement to be vigilant. Without extorting their support the general obtains it; without inviting their affection he gains it; without demanding their trust he wins it.[276]

The desperate situation described above may be in retrospect something of an exaggeration of NATO's position on the Central Plains of Europe, but discussions between former Cold War Army personnel still describe the expected life span of their units at the "Gap" in minutes.[277] Though such remarks may amount to histrionics in the hindsight of history, the apparent direness of the strategic situation may have had a similarly dramatic effect on freeing up a moribund doctrinal-development process. DePuy's efforts sharpened Army focus on doctrine and, borrowing from the clear signals handed him by the national security dialogue, made the Soviet Union the objective of that focus: a serious threat against which the U.S. military needed to be prepared to fight. The 1976 version of basic doctrine-defining Field Manual (FM) 100-5 over which DePuy presided came to be known under the shorthand title 'Active Defense,' and it

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[274] "Assessing the NATO/Warsaw Pact Military Balance." Washington DC: Congressional Budget Office, 1977, xii.
[275] Herbert I. London, *Military Doctrine and the Amerian Character: Reflections on AirLand Battle* (New Brunswick: Transaction Books, 1984), 29.
[276] Sun-Tzu, *The Illustrated Art of War*, 214-15.
[277] "I was a TOW gunner in a large CSC [company]; we were suppose [sic] to last about 18-20 minutes up at the 'GAP;'" see "It's the 1980s and the Soviets Pour Through the Fulda Gap," accessed 31 March 2014, http://www.ar15.com/forums/t_1_5/991638_.html&page=4.

directly addressed "the prime strategic problem the Army faced: a U.S. force quantitatively inferior in men and equipment on an armor-dominated European battlefield."[278] The manual anchored its recommendations on the "real" lessons of modern warfare, the capabilities of a Warsaw Pact enemy, the terrain of Central Europe, and the weapons then in the inventories of the potential combatants.[279] In emphasizing the danger of unpreparedness to fight in Central Europe and the paucity of U.S. conventional-weapons capability relative to the Soviet Union, DePuy used external factors, channeling them into a sense of urgency in his organization, a prerequisite for "gaining needed cooperation" within and among large organizations.[280]

In addition to providing a sense of urgency strong enough to drive Army-wide change, DePuy's clear vision and the intent he conveyed to his subordinate doctrine writers drove a centralized intra-institutional debate about Army doctrine, a vehicle for change that would remain in place long after his tenure as TRADOC commander and upon which subsequent TRADOC chiefs and the Army as a whole would build. DePuy built the foundation of his movement by writing to the commanders of the schools and training centers over which TRADOC presided, using a "pot of soup" metaphor to encourage them to contribute a wide collection of ideas about the changing nature of warfare and the doctrine that should accompany it.[281] He infused the stock for the pot with his own sense that the 1973 Arab-Israeli War had proven a new level of lethality in military weapons, which U.S. doctrine, training, and tactics

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[278] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 5.
[279] In his own words, DePuy admitted it was "necessary to oversimplify" to reach diverse audiences comprising the Army's "civilian masters," see Memorandum (draft) for the U.S. Army Chief of Staff; Subject: How to Determine Requirements for the Army's Weapons; Field Manuals 100-5, 1974-1977; Box: Transcripts and Diplomas; The William E. DePuy Papers; U.S. Army Military History Institute, Carlisle Barracks PA, 1-2. The draft memorandum is published in Swain, *Selected Papers of General William E. DePuy*, 143-50.
[280] Kotter found the same prerequisite is necessary for leading change within firms, see John P. Kotter, *Leading Change* (Boston: Harvard Business School Press, 1996), 36.
[281] 'Pot of Soup' Letter to TRADOC subordinate commanders; Folder O; Box: Personal Files 1974-1975; The William E. DePuy Papers; U.S. Army Military History Institute, Carlisle Barracks PA. Reprinted in Swain, *Selected Papers of General William E. DePuy*, 121.

were ill-equipped to handle, particularly against better-equipped Warsaw Pact forces with superior manning.[282] DePuy also saw the development of new doctrine as inseparable from the Army's acquisition efforts, and deliberately changed the doctrine for which his command had responsibility to ensure that the service would prevail in its quest for its "Big Five" weapons systems—the mechanized-infantry combat vehicle, a new main battle tank, an advanced attack helicopter, a new assault helicopter, and a short-range missile defense system.[283] Regarding inter-service cooperation as critical to his effort's overall success, he began initial discussions with TAC in 1973 that would lend the developing doctrine its cooperative bent in later years.

To ensure that the doctrinal revision would be more than solely an academic exercise, DePuy reached out to other senior leaders of important Army organizations. Working with the Army's Forces Command (FORSCOM), the Army's largest command and the one responsible for deploying combat units to meet the needs of joint force commanders, DePuy convened a seminar at Fort Knox in October 1974 that discussed combat techniques and tactics for company- and battery-sized units.[284] After learning that difficult questions about doctrine in the context of emerging military technology plagued the Army at all levels, DePuy held the first of several conferences with his subordinate commanders in December 1974 and charged them to write

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[282] DePuy's description of the need for the M113 infantry fighting vehicle made his feelings clear: "If the U.S. Army is to fight effectively on the mechanized battlefield against the increased lethality of modern weapons, while also outnumbered, we need to adopt the most advanced tactics and techniques of combat;" see Letter to General Frederick C. Weyand; Letters from General Clarke, 1976; Box 9: Correspondence 1975-1976; The William E. DePuy Papers; U.S. Army Military History Institute, Carlisle Barracks PA, 1. The letter is reprinted in *Selected Papers of General William E. DePuy*, 161-63. The 1973 Arab-Israeli War is also known as the 'Yom Kippur War,' the 'October War,' or simply the 'Mideast War,' and involved armed conflict among Israel, Syria, and Egypt, with close scrutiny and involvement by the U.S. on behalf of Israel and the Soviet Union on behalf of Egypt and Syria; see "The 1973 Arab-Israeli War," U.S. State Department, accessed 14 March 2014, http://history.state.gov/milestones/1969-1976/arab-israeli-war-1973.
[283] Herbert, *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 10-5, Operations*, 16, 77-78.
[284] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 4.

practical "how-to-fight" manuals based on the weapons of the day, the expected Soviet threat, and the most recent examples of modern combat, namely the Arab-Israeli War.[285]

DePuy elevated the importance attached to rewriting FM 100-5 by moving responsibility for it from Fort Leavenworth, home to TRADOC's subordinate Combined Arms Center, to his headquarters at Fort Monroe. Meetings and conferences held throughout 1975 incorporated the perspectives of U.S. Army commanders in Europe and re-examined the anticipated role of air mobility in that theater.[286] Though it was driven throughout by the efforts of flag officers and major headquarters, DePuy's leadership allowed for the publication in July 1976 of an FM 100-5 that was very much a product of the institutional Army, even as it made major alterations to the institution's doctrine. Its distinguishing characteristics were the use of clear language, the incorporation of specific examples of how to employ U.S. forces against existing enemy weapons systems, and the need to win the 'first battle.' The 'first battle' concept was one of concrete and emotional significance to the Army. It meant that the new doctrine dismissed the idea that the U.S. would have the luxury of a long time to mobilize and bolster its force in Western Europe if the Soviet Union exhibited an aggressive push in that direction. In terms of Army *esprit de corps*, it addressed an incipient but growing concern that the service had a dismal record of failure in the opening battles of wars in which it became involved, and required the

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[285] DePuy's explained his vision for the manuals in a letter to General Weyand accompanying the release of the 1976 FM 100-5; Letter to General Frederick C. Weyand; Folder: Field Manuals 100-5, 1974-1977; Box: Transcripts and Diplomas; The William E. DePuy Papers; U.S. Army Military History Institute, Carlisle Barracks PA, 2. Reprinted in Swain, *Selected Papers of General William E. DePuy*, 193-95. Years later, DePuy described the full context of his initiative as demand from subordinate commanders, the lessons of the 1973 Arab-Israeli War, and interest "in trying to get our doctrine in synch with the Germans;" see Presentation to the TRADOC Commanders' Vision '91 Conference; Folder: Army of the Future; Box 2: Official Papers-CG, TRADOC; etc.; The Maxwell R. Thurman Papers; U.S. Army Military History Institute, Carlisle Barracks PA, 5. Transcript reprinted in *Selected Papers of General William E. DePuy*, 427-35.
[286] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 5. DePuy also provided a detailed account of the flurry of Army-wide activity and TAC-TRADOC work prior to the finalization for print of the 1976 FM 100-5; see Letter to General Frederick C. Weyand; Folder: Notes from the Top; Box: DePuy Miscellaneous 1975-1976; The William E. DePuy Papers; U.S. Army Military History Institute, Carlisle Barracks PA, 1-3. Reprinted in Swain, *Selected Papers of General William E. DePuy*, 179-83.

mobilization of ever-greater force before eventually regrouping and prevailing overall—but in

the case of Vietnam, never attaining victory.[287]

2. Building Inter-Service Trust
President Nixon pursued *détente* with the Soviet Union in a mid-Cold-War gambit for some

diplomatic warmth. During the same period, the Army and the Air Force enjoyed their own

lesser, metaphorical version of the concept. The Air Force Chief of Staff, General George Brown,

sought to improve inter-service relations with his Army counterpart, General Creighton

Abrams.[288] The TAC-TRADOC dialogue reflected a similar overture between two of the

services' more influential four-star commands. At the same time as he was having discussions

about the new lethality of war with the wider Army, DePuy's dialogue with General Robert

Dixon, then the TAC commander, began to imbue his thinking and the draft operations manual

with a theme of "the vital role to be played by tactical air in the air-land battle."[289] DePuy

emphasized an institutional relationship with the Air Force throughout his command of

TRADOC.[290] He had latitude in his undertakings compared to what a non-service-chief Army

general would otherwise enjoy. Because General Abrams became terminally ill in April 1974, he

stopped providing DePuy the close supervision and advice that had previously been his habit. In

1975, DePuy and Dixon started the Air Land Forces Application (ALFA) Agency to coordinate

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[287] The most notable book to discuss this phenomenon was not published until 1986; see Charles E. Heller and William A. Stofft, *America's First Battles: 1776-1965* (Lawrence KS: University Press of Kansas, 1986). However, its authors and the recent experience that brought its conclusions into sharp focus were developed in the immediate aftermath of Vietnam.

[288] See, e.g., the account in Futrell, *Ideas, Concepts, Doctrine Vol. 2*, II, 1961-1984, 530.

[289] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 5. DePuy's correspondence indicates his understanding of Air Force views on command and control and how they differed from Army preferences, but he exhibited shrewdness in the continued benefit of engaging a sister service, holding dialogue with its stakeholders, and sharing his viewpoint with other influential Army leaders while urging them to do the same. See, e.g., Letter to General Frederick J. Kroesen; Folder: Miscellaneous Correspondence; The William E. DePuy Papers; U.S. Army Military History Institute, Carlisle Barracks PA, 1-2; Letter to Robert W. Komer; Folder: Correspondence 1973-1977; The William E. DePuy Papers; U.S. Army Military History Institute, Carlisle Barracks PA, 1-2.

[290] Suzanne C. Nielsen, *An Army Transformed: The U.S. Army's Post-Vietnam Recovery and the Dynamics of Change in Military Organizations* (Carlisle Barracks PA: Strategic Studies Institute, U.S. Army War College, 2010), 43.

cooperation between their respective commands, an organization that has endured until now, albeit under an all-inclusive joint umbrella.[291]

The motivation for TAC's apparently eager cooperation with TRADOC seems to be a complex entity. Davis speculated that impending reductions for conventional forces, the uncertainty of manpower availability at the termination of the draft, and the two organizations' ongoing relationship developed fighting together in Vietnam may have pushed them together again after the conflict.[292] Others have noted the Air Force, since the mid-1960s, had been going through a change in what Thomas Ehrhard described as its "monarchic" leadership structure.[293] Specifically, the Air Force was transitioning from domination by SAC's long-range, strategic bomber pilots to TAC's air superiority-, interdiction-, and close support-focused fighter pilots.[294] Evidence of rebellion against SAC's influence on the Air Staff by came in events like Major General Arthur Agan's 1965 conference of fighter aces—one needed fifteen or more kills to get an invitation—to discuss the need for a new, dedicated air-superiority fighter.[295] This effort and others like it served to sway institutional opinion during the 1970s toward the need to refocus on attaining air superiority through fighters and the acquisition of a suitable platform to accomplish it. Moreover, the changing weapons and international dynamics of strategic deterrence diminished the appeal and prestige of the formerly dominant SAC.[296]

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[291] ALFA was the predecessor to today's Air Land Sea Application (ALSA) Center, located now at Joint Base Langley-Eustis, Virginia.

[292] Davis, *The 31 Initiatives*, 24.

[293] Specifically, Ehrhard argues that the Air Force was experiencing a 'feudal' interlude in its normally monarchic structure, with power shifting from bomber pilots to fighter pilots in the 1970s; see Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 102.

[294] Worden penned the authoritative account of the power shift, arguing that it spanned the period from 1965 to 1982; see Mike Worden, *Rise of the Fighter Generals: The Problem of Air Force Leadership* (Maxwell AFB: Air University Press, 1998), x.

[295] Futrell, *Ideas, Concepts, Doctrine Vol. 2*, II, 1961-1984, 471. The invitation of high-scoring aces highlights a chief mechanism through which TAC accumulate influence—tactical credibility proven in high-stakes combat.

[296] Worden, *Rise of the Fighter Generals: The Problem of Air Force Leadership*, 217-20.

Countering the TAC gambit toward air-superiority fighters was Defense Department leadership, who acquiesced to Army pressure for more fixed-wing close air support (CAS) capability. Secretary of Defense Robert McNamara and Harold Brown—then the department's director of research and engineering and later the Secretary of the Air Force—"demanded that the Air Force procure some less expensive aircraft specifically for ground attack support missions," which led to the decision to purchase a redesigned version of the Navy's A-7 *Corsair II* for CAS missions in Vietnam.[297] The Air Force Chief of Staff, General John McConnell, described the decision as means to sate the demands of "certain elements in the military and certain elements in Congress."[298] Though he did not clarify the exact nature of the congressional pressure, he elaborated that the A-7 decision came about "to demonstrate that we did want to give the Army every possible means of close support" and because the Air Force believed that it could "do it better than they can," referring to the Army's proposal for the AH-56 attack helicopter.[299]

The dispute between the Army and the Air Force over CAS and the Army's requirement for additional attack helicopters simmered, despite efforts of senior officers in both services to compromise on the issue, from the mid-1960s through the end of Vietnam.[300] The services apparently reached a satisfactory agreement in mid-1975 with an agreement that the attack helicopter, while a complement to CAS, did not impinge on the Air Force's role of providing CAS.[301] The agreement came about because of the individual efforts of senior officers such as

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[297] Futrell, *Ideas, Concepts, Doctrine Vol. 2*, II, 1961-1984, 471.
[298] U.S. Senate, Subcommittee of the Committee on Appropriations, *Department of Defense Authorization for Appropriations for Fiscal Year 1970*, 91st Congress, 1st session, 1969, Part 4: 123.
[299] Ibid., Part 4: 124.
[300] See, *inter alia*, *Ideas, Concepts, Doctrine Vol. 2*, II, 1961-1984, 516-31.
[301] The agreement said, "The Army and the Air Force agree that *attack helicopter does not perform CAS* but is intended to support Air Force CAS capabilities… Because of the *limited range, speed, and firepower of attack helicopters* as compared to Air Force fixed-wing CAS capabilities, the Air Force does not consider the attack

Generals Dixon and DePuy. The generals' comments allude to the first-order problem they faced in Europe: they had "grown up;" they had gotten past earlier fights about roles and missions; they saw a clear need to cooperate given "the overwhelming size of what we have to do" in prosecuting "the air-land battle."[302] Both services were looking for redemption in the aftermath of a demoralizing and unsatisfying Vietnam experience.[303] The Army, following the example of other land forces after a defeat or substantial setback (e.g., France after the Franco-Prussian War and after an extended occupation and horrific casualties in WWI) turned to doctrine for this redemption.[304] Containment and exclusive focus on nuclear superiority were dead, and the U.S. Army had to style itself to fight a numerically superior Warsaw Pact in central Europe.

Though the first-order threat seems likely to have driven a great deal of the cooperative spirit, individual personalities and exogenous pressures also seem to have had an effect. In Congress, prominent Senator Barry Goldwater characterized Senate hearings on CAS in 1971 as an effort "to answer the question of whether we need one, two, three, or four tactical air forces…my concern is duplication, a very costly duplication."[305] Given this congressional scrutiny, the Army and Air Force's mutual decision to agree that, after years of fighting about it, neither anymore impinged on each other's close support missions, seems to indicate a combination of first-order threat, organizational self-interest, and bureaucratic politics were all in play. Within the Defense Department, both TAC and the Army proved adept at reading congressional tealeaves. In 1975, seventy-five percent of the defense budget went toward general

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helicopter as duplicating Air Force CAS;" see U.S. Senate, Committee on Armed Services, *Fiscal Year 1977 Military Procurement Authorizations*, 94th Congress, 2nd session, 1976, Part 10: 5639.

[302] Dixon and DePuy both issued comments in the "Air Force Policy Letter for Commanders," (Washington DC: Department of the Air Force, 1975).

[303] See, e.g., London, *Military Doctrine and the American Character*, 2; Nielsen, *An Army Transformed: The U.S. Army's Post-Vietnam Recovery and the Dynamics of Change in Military Organizations*, 36-37.

[304] London, *Military Doctrine and the American Character*, 1.

[305] U.S. Senate, Committee on Armed Services, *Hearing before the Special Subcommittee on Close Air Support*, 92nd Congress, 1st session, 22 October-8 November 1971, 105.

forces (as opposed to strategic nuclear forces), a dramatic shift from the days of the New Look.

Of the entire outlay, twenty-five percent went toward buying tactical fighter aircraft.[306] As much

as an 'appeal to purpose' appeared in both services' histories dedicated to AirLand Battle's

evolution, the concept seems also to have provided an immediate solution for a raft of self-

interested problems and opportunities that the Army and the Air Force (or more specifically,

TAC) faced in the years after Vietnam.

3. Top-Down Leadership and its Consequences
The first stepping-stone era prior to full-fledged development of AirLand Battle came to a close

with the release of the 1976 edition of FM 100-5 and the Army's response to the document. As

the next section will discuss, this response grew to become quite negative. Part of the reason for

the tone of the response may have been the way in which DePuy instituted his doctrinal change.

In contrasting General Starry's approach to developing AirLand Battle, which "took pains to

include the Army at large," Romjue implied that DePuy's Active Defense was a top-down work

by an elite few.[307] The difficulties of top-down leadership, especially in a highly bureaucratic,

change-resistant organization like the Army, are legion and well documented.[308] The feedback

Active Defense received did not doom it to failure, though. Instead, the impetus for doctrinal

exploration that it represented continued through another phase, one that saw the development of

AirLand Battle proper. If undertaking a large, inter-organizational project is difficult for a leader,

giving that initiative enough momentum to continue from one tenure into that of a successor is

even more uncommon. Yet that is precisely what happened with General DePuy's initiative to

completely reinvent Army doctrine with significant Air Force buy-in, an act that allowed Active

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[306] David T. Johnson and Barry R. Schneider. "Current Issues in U.S. Defense Policy." Washington DC: Center for Defense Information, 1991, 217.

[307] Romjue, "The Evolution of the AirLand Battle Concept," 7.

[308] See, *inter alia*, William Easterly, "Institutions: Top Down or Bottom Up?," *American Economic Review: Papers & Proceedings* 98, no. 2 (2008): 99; Paul Berman, *The Study of Macro and Micro Implementation of Social Policy* (Santa Monica CA: RAND Corporation, 1978), 12-13.

Defense to transform into AirLand Battle. This continued development opened with the Army's institutional reaction to the 1976 field manual.

C. 1976-1981: Reactions to 'Active Defense'
The 1976 FM 100-5 elicited responses that spanned a spectrum from enthusiasm to pessimistic skepticism, but the latter came to dominate discussion. In the understated terms of the TRADOC command historian, the initial "reception of the new doctrine was good, even enthusiastic," but quickly led to a "pointed and lively doctrinal debate."[309] In general, positive responses cited the unequivocal and authoritative voice with which the document spoke. In accord with General DePuy's direction, there was no doubt that FM 100-5 was the Army's new doctrine. It was accessible, widely distributed, designed to be "current and readable," and formed a foundation upon which more tactical publications would build.[310] This pleased those who wanted to see the Army return to its fighting expertise, but gave pause to those who thought through its implications for the battle in Central Europe and saw gaps in the vision. Moreover, it arrived at a time when the Army was seeking institutional redemption after Vietnam. Instead of apathy or a resistance that appealed to an existing favorable state of affairs, Active Defense elicited either enthusiasm or disdain.[311] Whether they loved or hated its specific ideas, students of doctrine in the Army were looking for change, and Active Defense propelled them down that road.

Reaction to the manual fell into several categories, and it earned some quick positive reviews. Luminary strategist Colin Gray called it an "excellent new master operations manual," true, but his was an offhand accolade in an article more devoted to explaining the difficulty of

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[309] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 13; "The Evolution of the AirLand Battle Concept," 6.
[310] *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 4-6.
[311] In describing resistance to top-down change, Easterly wrote of those who are wary of significant change because they believe in the intrinsic merit of what has evolved over time; see Easterly, "Institutions: Top Down or Bottom Up?."

reconciling force planning to the political constraints of American democracy.[312] In a mostly

positive review, Archer Jones noted how Active Defense gave the Army new clarity and a return

to Clausewitzian basics, but was unambiguous in labeling it "the new defensive doctrine" and

questioned its analysis of Soviet concentrations against NATO defenses, its hopeful assumptions

about the quality of military intelligence, and its characterization of European terrain.[313] Dan

Loomis, reviewing from the perspective of the Canadian land forces, noted the manual's

overarching assumption that the U.S. was committed to a non-nuclear land war in Central Europe

to defend its strategic interests. His review then concentrated on the defensive stance against the

Soviet bloc forces that this implied and the great costs it would entail.[314] Loomis also correctly

predicted the controversial nature of the later discussion the release of this FM 100-5 would

presage.

It was in its focus on the defensive battle in Central Europe that the 1976 FM 100-5 took

the most criticism. Critics honed in on its singular focus on a defense against a 'central front.'

The concept that the Warsaw Pact would continue to feed its forces predictably and linearly into

an easily identified portion of the European plains while NATO forces maneuvered to mow them

down with concentrated firepower seemed fanciful to those who believed the Soviets still

retained a shred of operational artistry and might themselves try to maneuver. William Lind, in

particular, savaged the manual with a review that took it to task for its emphasis on fighting

defensive battles at a numerical disadvantage, the importance it attributed to winning the first

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[312] Colin S. Gray, "Force Planning, Political Guidance, and the Decision to Fight," *Military Review* 58, no. 4 (1978): 13.

[313] Archer Jones, "The New FM 100-5: A View from the Ivory Tower," *Military Review* 58, no. 2 (1978): 36.

[314] Dan G. Loomis, "FM 100-5 *Operations*: A Review," *Military Review* 57, no. 3 (1977): 67-69.

battle, its perceived advocacy of attrition warfare, and its overly tactical (as opposed to operational or strategic) prescriptions.[315]

Lind's list of deficiencies outlined in the Army's flagship doctrinal publication, *Military Review*, railed against the assumptions of the 1976 manual like so many waves of Warsaw Pact armor maneuvering against an outnumbered and inflexible NATO defensive line. He charged the manual's writers with neglecting the advantages afforded an attacker by electronic attack and precision-guided munitions, pointed out that NATO lagged its potential foe in deployment progress, showed that Europe was not prepared to use or face the latest anti-tank weapons that had been used to great effect in the Mideast War, and speculated that the allied forces were perhaps not as mobile as imagined in the face of an armored advance. In short, he questioned the assumed superiority of the defense.[316]

Lind next turned toward the famous "can-do" attitude of the Army, and asked whether careerism might not be keeping commanders from speaking out against a doctrine that was foolhardy in its anticipated application against a hardy Pact enemy.[317] John Sloan put a finer point on the mechanisms by which defeat would come, raising questions about the enemy's superior artillery ratio and the defenders' risk of encirclement.[318] Lind showed that the Army's insistence on winning the first battle might put it in a tough position to win follow-on battles, and that it had not considered the eventuality in any great detail, in spite of explicit Soviet doctrine that emphasized attacking in waves of echeloned forces. His description of the briefings he received on Active Defense decried what he saw as a return to elevating firepower and attrition over maneuver while assuming away the enemy's own ability to maneuver. He showed how the

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[315] William S. Lind, "Some Doctrinal Questions for the U.S. Army," *Military Review* 57, no. 3 (1977): 54.
[316] Ibid., 55. Lind wrote his critique at the behest of a congressional influencer, Senator Gary Hart, which gave it an exogenous facet this chapter deals with in a later section.
[317] Ibid., 56.
[318] John F. Sloan, (Letter to the Editor) *Military Review* 57, no. 7 (1977): 2, 111.

planned defense in depth could rapidly become a linear defense against the Soviet onslaught if the communications, intelligence, and movement of the NATO defense were not pristine. Archer Jones in turn pointed out that combat in Central Europe would be far from clean.[319] With some well-placed historical examples to make his point, Lind dealt the manual a decisive intellectual blow, accusing the Army of a "Maginot mentality" and "preparing to lose a war honorably."[320]

The entire catalog of Lind's critique would not be worth recounting here but for the breadth of his influence: it is clear that the Army made great efforts to answer all of his criticism in its next effort. Authors like Phillip Karber attempted a defense of the doctrine, and TRADOC weighed in on its own behalf about the maneuver-attrition charge, but negative reactions quickly overwhelmed its viability.[321] Richard Lock-Pullan argued that the evolution from Active Defense to AirLand Battle, given that it happened during a period of "strategic stability," debunked "the common perception that failure leads to innovation."[322] While the point remains intact that doctrinal innovation occurred absent a tangible failure of a fielded army, the criticism of Active Defense indicated its failure 'on paper' to many observers. If it was not an outright failure, at least a fear of future failure haunted its reception, thus fanning the flame of urgency still burning among U.S. military organizations after Vietnam. To quench that flame, the Army needed to find a distinct doctrine that answered the charges leveled against Active Defense. In the course for that search, the service would be pushed into ever-closer alliance with the Air Force's TAC.

General Starry took command of TRADOC in July 1977, in the midst of the heated discussion that the recently released FM 100-5 had started. A former corps commander in

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[319] Jones, "The New FM 100-5," 35-36.
[320] Lind, "Some Doctrinal Questions for the U.S. Army," 56-64.
[321] Phillip A. Karber, "Dynamic Doctrine for Dynamic Defense," *Armed Forces Journal International* 114(1976): 28-29; "TRADOC's Reply," *Armed Forces Journal International* 114(1976): 27.
[322] Richard Lock-Pullan, "How to Rethink War: Conceptual Innovation and AirLand Battle Doctrine," *Journal of Strategic Studies* 28, no. 4 (2005): 680.

Europe and a chief contributor to the current version of the manual, Starry knew the existing material well and had developed an informed perspective about the theater of war toward which it looked. He had performed a detailed analysis of the force structures and possible battles that might take place. Calculating the interaction of weapons systems, forces, weather, terrain and other battle factors with mathematical formulae, a study Starry had overseen as the V Corps commander purported to simulate how battle against the Warsaw Pact forces might unfold.[323] His conclusions were that the defenders' position was stronger than previously believed, that delaying or destroying second-echelon forces was important, and that CAS would be essential to any winning effort.[324] He saw for himself three roles in his tenure at TRADOC: 1) to conduct a continuation of the "battle calculus" he had started as the V Corps commander; 2) to adopt an eight-year time horizon that would put Army doctrine on a more secure long-term footing, not just solve immediate problems; and 3) to solve the daunting problem of second-echelon and follow-on forces that the Soviet machine could generate and thrust at NATO.[325]

Starry and his subordinate planners worked diligently on these goals, producing a conceptual framework for analysis called the Battlefield Development Plan.[326] In 1979, the TRADOC doctrinal team began to refer to a concept called the "extended battlefield," a means of envisioning the "Central Battle" that warfare against the Warsaw Pact would bring.[327] The abstraction conveyed a vision of the battlefield that was physically larger than Army commanders had considered before. It demanded that brigade, division, and corps commanders "see" fifteen, seventy, or 150 kilometers, respectively, beyond their furthest-forward troops into

[323] Swain, *Selected Papers of General William E. DePuy*, xi.

[324] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 23-24.

[325] Ibid., 24. Starry's ideas did not develop in a vacuum. The Army Chief of Staff, General Edward Meyer, while working as the Army's Deputy Chief of Staff for Operations and Plans, suggested an FM 100-5 revision to Starry as well; see Letter to General Donn A. Starry; TRADOC, Fort Monroe; Letter to LTG William C. Meyer; TRADOC, Fort Monroe.

[326] *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 25.

[327] Ibid., 26.

enemy territory. The concept also tried to emphasize the time dimension of fighting, advancing

an idea that commanders, depending on the echelon they controlled, must look forward twelve,

twenty-four, or seventy-two hours into the future, anticipating and countering the movement of

forces the enemy might bring to bear.[328]

Level of Command	Time period of *influence* (Time period of *interest*)	Approx. distance of *influence* (distance of *interest)* beyond one's forward line of troops
Battalion	0-3 hours (0-12 hours)	5 km (15km)
Brigade	0-12 hours (0-24 hours)	15 km (70 km)
Division	0-24 hours (0-72 hours)	70 km (150 km)
Corps	0-72 hours (0-96 hours)	150 km (300 km)
Echelons Above Corps	72+ hours (96+ hours)	150+ km (out to 1,000 km)[329]

Table 3.1 Time and Distance Measures of the Extended Battlefield

The new battlefield was bigger, both in size and time, than any previous Army doctrine had

attempted to envision. Since their potential Warsaw Pact opponents would initially outnumber

the forces available to fight in Central Europe, the doctrine created new requirements for special

operations forces, long-range reconnaissance, and long-range interdiction to see and attack the

deepest echelons and forthcoming sallies of the enemy force. While developing the novel

operational concepts, Starry was also absorbed with formalizing a doctrinal-development process

for the Army that made these concepts the starting point for doctrine and all service publications.

He returned responsibility for doctrine writing back to the instructors at various combat schools,

rather than segregating it within a pool of dedicated doctrine writers.[330]

Starry recognized the difficulty of some of the abstract concepts his development process

created. He wrote that the "integrated battlefield" (an operational concept for interdiction that

included 'tactical' nuclear options to keep the NATO force from being overrun) and the

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[328] "The Evolution of the AirLand Battle Concept," 7.

[329] Adapted from *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 41.

[330] Ibid., 30.

"extended battlefield" (combining the operational concepts of geographic depth and time described earlier) threatened to become Army "in-words" that were bandied about without significant meaning or distinction.[331] To get the essence of his comprehensive idea across in a term that would resonate with wide audiences, Starry elected to use—and went to great effort to promulgate—the "AirLand Battle" terminology.[332] Beyond the helpfulness of defining and using a common term, the problems of 'seeing deep' and conducting deep operations into enemy territory exercised the intellectual capacity of the Army's most thoughtful command. The answer emerged as an increasing reliance on an inter-service partnership. The 'twenty-star' meeting at Fort Monroe in October 1979 brought together the service chiefs, the Army's vice chief, the TAC commander, and General Starry. The discussions stressed the importance of the so-called "attack of the second echelon" and broached the sortie requirements for air interdiction operations.[333]

The national sense of urgency to prepare for international aggression stepped up in 1979 as well. The Carter administration, previously hopeful for international agreements and multi-lateral frameworks to govern relations among nations, "awoke" after the Soviets invaded Afghanistan in December.[334] The beginning of the Iranian hostage crisis at the same time put a spotlight on the dangers incumbent in international relations and called attention to a dearth of U.S. military

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[331] The drafters of the integrated battlefield concept would no doubt take issue with this description, as their plan entailed more principles than the use of tactical nuclear weapons. However, as so many other concepts that attempt to blend nuclear options with conventional options, the unique stature of nuclear weapons tends to characterize the entire effort. In the words of one its main planners, the integrated approach acknowledged, "there was no non-nuclear battlefield environment anymore." Descriptions of interdiction's ability to create windows of time "during which nuclear release authority, if needed, could be secured" convey the seriousness with which the Army viewed its overmatch at the hand of the Soviets; see ibid., 37-38.

[332] Donn A. Starry (General, USA; Commander, TRADOC), "The Air Land Battle" teletype message to TRADOC subordinate commands, 29 January 1981.

[333] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 32. The slight asymmetry of Army and Air Force representation—no vice chief representation for the Air Force—demonstrates both the growing influence of TAC (then commanded by General Wilbur Creech) as well as the greater positional authority of the Army Vice Chief of Staff relative to his Air Force counterpart.

[334] "Welcome to the 19th Century," *The Wall Street Journal*, 17 March 2014.
http://online.wsj.com/article/SB10001424052702304914904579441752139339602.html.

capability to handle such affairs. After Ronald Reagan was elected President in 1980, the urgency to respond to the Soviet Union grew. Among Reagan's dominant campaign themes was an idea that the Carter administration had been "too soft" on the Soviet Union and lackadaisical in developing intelligence assets to thwart its base intentions.[335] The new Director of Central Intelligence, William Casey, "usually devoted some part of his day to the Soviets."[336] Strategic thinking about how to defeat what would become the "Evil Empire" was in vogue in Washington, DC, and throughout the U.S. security establishment.[337] It was only natural that the military would follow suit.

The Army's concept of interdiction became more refined and specific, advocating an approach that would not simply make happenstance interruptions of enemy capacity, but would on its own "set the terms of battle."[338] The reinvention of interdiction from an act of random effect to one with a specific, focused effect on the battlefield became a place where the Army and Air Force would spend a great deal of time in coordination. It caused the development of a hybrid air power application that came to be known as battlefield air interdiction (BAI), which bridged the gap between deep interdiction and CAS. In March 1980, the revision of FM 100-5 began again, and the guiding principles gripped up in the name "AirLand Battle"—one that synchronized "deep attack" with the fighting at the forward line of troops (FLOT) and made both critical to success—provided an intellectual framework that demanded joint cooperation between the Army and the Air Force in the next few years.

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[335] Douglas Brinkley, *Unfinished Presidency: Jimmy Carter's Journey to the Nobel Peace Prize* (New York: Penguin Books, 1998), 14.

[336] Bob Woodward, *Veil: The Secret Wars of the CIA, 1981-1987* (New York: Pocket Books, 1987), 171.

[337] See, e.g., G. Thomas Goodnight, "Ronald Reagan's Re-Formulation of the Rhetoric of War: Analysis of the 'Zero Option,' 'Evil Empire,' and 'Star Wars' Addresses," *Quarterly Journal of Speech* 72, no. 4 (1986): 390.

[338] Edward A. Dinges and Richard H. Sinnreich, "Battlefield Interdiction: Old Term, New Problem," *Field Artillery Journal* 48, no. 1 (1980): 14-17.

D. 1981-1986: Army-Air Force Cooperation Reaches a Peak

General Starry formally published the AirLand Battle operational concept in March 1981 along

with an Army reorganization study TRADOC had been conducting called *Corps '86*. This

release marked a significant campaign throughout 1981-82 to inform military and general

audiences about AirLand Battle.[339] The ground work and previous inter-service coordination

began to immediately provide evidence of gelling relationships between the Army and Air Force,

with the April 1981 publication of a collaborative TAC-TRADOC pamphlet addressing joint

suppression of enemy air defenses (JSEAD). In keeping with the distribution of responsibilities

across the deep battlefield, the JSEAD agreement gave both services a voice in target nomination,

assigned primary responsibility based on observed and unobserved lines of ground fire, and put

the air component commander in charge of the overall effort.[340]

Visible cooperation continued with a joint agreement about offensive air support (OAS) in

May 1981, which established a conceptual framework for deep attack of the enemy's follow-on

forces. The concept was called "Joint Attack of the Second Echelon" (JSAK), and its

significance was to wed both services to a tactical concept for air-land battle that NATO had

published.[341] The NATO pamphlet of interest, Allied Tactical Publication (ATP) 27(B), defined

BAI as distinct from other forms of interdiction that attacked at deep range. As with CAS, the

BAI supported ground commanders by attacking enemy formations that would threaten friendly

forces, but unlike CAS, remained completely under the control of the air component commander.

The agreement was a remarkable compromise on a topic otherwise marked by mutual

dissatisfaction throughout the history of air power (see Appendix A). Romjue recorded that both

Army and Air Force headquarters staffs endorsed the agreement, with the Air Staff subsequently

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[339] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 44-45.
[340] Davis, *The 31 Initiatives*, 31-32.
[341] Ibid., 30.

making the agreement "authoritative Air Force doctrine" destined to appear in appropriate "doctrinal manuals."[342] The May 1981 agreement also set in place the method for apportionment and allocation of air missions under a joint force commander, a system of nomination and execution that still holds sway in joint doctrine.[343]

The agreements signed in 1981 took place during Army efforts to write and revise the new version of FM 100-5, which it published in August 1982. The lead author for the effort was then-Lieutenant Colonel Huba Wass de Czege, aided by Lieutenant Colonel (later Lieutenant General) L.D. Holder and Lieutenant Colonel Richmond Henriques.[344] This version of *Operations* enjoyed greater acceptance within the Army than had its predecessor, and it also gained more cachet throughout the meso-organizational and exogenous levels of the U.S. defense establishment. Part of the warm reception for the 1982 FM 100-5 arose from the Army's general disillusionment with the 1976 version; officers in the field charged with implementing its precepts spoke of rigid adherence to formulaic battle plans, neglect of psychological factors that could not be measured directly, and a perceived lack of reserves. However, Starry and Lieutenant General William Richardson, who had a supervisory role of the writing process at Fort Leavenworth, also took

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[342] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 63. The veracity of Air Staff endorsement of the BAI concept is not in doubt, but it is likely that Romjue's implication of the Air Staff's endorsement of all of AirLand Battle as official doctrine is wishful thinking. In spite of the Air Force's very visible and tangible involvement with AirLand Battle and projects that sprang from it, AirLand Battle as a concept never received direct reference in the capstone Air Force doctrine that appeared in the era (the 1984 version of Air Force Manual 1-1). The Air Force doctrine did incorporate, for the first time, the Clausewitzian principles of war, and "rather clearly reflected a new spirit of cooperation being found in the Pentagon in 1982-84;" see Futrell, *Ideas, Concepts, Doctrine Vol. 2*, II, 1961-1984, 744. However, the document still retained a solid assertion that air power, given its ability to "exploit speed, range, and flexibility, better than land and sea forces…therefore must be allowed to operate independently of those forces;" "Air Force Manual 1-1: Basic Aerospace Doctrine of the United States Air Force," (Washington DC: Department of the Air Force, 1984), vii. If the doctrine itself was not *too* cooperative, air power advocates accused it of being so. Its recognition of three distinct "land," "naval," and "aerospace" battles and acknowledgement that domain-specific forces had primacy for winning those battles received a great deal of ire from air power advocates, who argued that the Air Force was guilty of "poor marketing" in sharing its capabilities with the larger defense establishment; see Glen A. Kent and David A. Ochmanek, *Defining the Role of Airpower in Joint Missions* (Santa Monica CA: RAND Corporation, 1998), 2, 9.
[343] Davis, *The 31 Initiatives*, 30-31.
[344] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 43.

positive steps to give the new manual a better chance for wide acceptance. By eschewing language that sounded like one might reduce warfighting to formulae and by reinserting principles from writers of classical military theory into the manual, its authors and influencers sought to send the message that they were returning the Army to timeless truths and accounting for certain leadership characteristics that could not necessarily be measured or calculated. Four themes emerged in the new manual: initiative, depth, synchronization, and agility.[345]

Rather than pursue methods of authorship and implementation that were as top-down as that used by DePuy, Starry sought early-draft feedback from the field. He directed that his contact team brief and staff the forthcoming 100-5 throughout the Army starting in February 1981 to allow incorporation of the comments it elicited. He reached out to previous critics in the circle of prominent defense writers, including Edward Luttwak and Lind. One of the significant changes that came from the staffing process was the inclusion of the "mission orders" concept, the idea that subordinate units fully informed of their commander's intent could execute a campaign successfully when the fog of war prevented centralized control.[346] The staffing process also led to the inclusion of the center of gravity—a point of main effort, main attack, main interest, or main vulnerability (depending on one's perspective and philosophical bent).[347] The efforts to get Army-wide buy-in fleshed out the ideas at the core of the document, stressed the depth of the battlefield (including the importance of defending rear areas), and emphasized flexibility in the overall approach to the Central Battle. The Clausewitzian imagery of a "shield of blows" emerged from discussions about the new doctrine, clarifying an idea originally in

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[345] Ibid., 52-57.
[346] Ibid., 58. Rendering it *Auftragstaktik* reflects the Army's penchant—from which it has not escaped at this writing—for expressing ideas in German, specifically Clausewitz's German. A review of most literature dedicated to the study, production, and use of military doctrine leads to a conclusion that most in the field find discussion of military matters impossible without substantial importation of the language.
[347] True to form, center of gravity was rendered in the original German in which Clausewitz had described it: *Schwerpunkt*; see ibid., 59.

Active Defense.[348] When Starry handed over command of TRADOC to General Glen Otis in August 1981, he left his successor with a nearly completed field manual. Otis included a discussion of the operational level of war—an intermediate stratum between tactics and strategy—into the FM 100-5 version he supervised.[349] The AirLand Battle doctrine that emerged in 1982 stressed a deep visualization of the battlefield, one whose physical dimensions would require significant involvement from the Air Force to engage as it described.

The Army and the Air Force passed the next significant milestone on the road to inter-service cooperation over AirLand Battle when Generals Meyer and Gabriel, the two services' respective chiefs, together signed a memorandum that pledged the "enhancement of joint employment of" AirLand Battle.[350] Progress did not pause in 1983, and even accelerated under a new Army Chief of Staff. General John Wickham reaffirmed the Army's commitment to joint cooperation with another bi-service memorandum he signed with General Gabriel. This document established terms of reference for a "joint…force development process" capable of creating "the most combat effective, affordable joint forces necessary for airland combat operations."[351] These terms of reference and the development process they encompassed led directly to the '31 Initiatives,' the clearest and most tangible evidence of joint cooperation between the two services observed throughout the AirLand Battle era.

Pausing here to view the progress on joint relations from 1973, it is useful to adopt the perspective of those who have incorporated social psychology into the study of inter-organizational cooperation. The means and methods established by the Air Force and the Army

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[348] Ibid.
[349] Ibid., 61.
[350] Meyer and Gabriel, "Army-Air Force AirLand Battle MOU."
[351] John A. Wickham, Jr. and Charles A. Gabriel, "Memorandum of Understanding on Initiation of a Joint U.S. Army-U.S. Air Force Force Development Process," (Washington DC: Department of the Army and Department of the Air Force, 1983).

to facilitate AirLand Battle reflected attributes that have augured success in other major endeavors. At its inception, the principals of both organizations committed to a long-term relationship of ongoing negotiations. General DePuy, who began the initial Army engagement with TAC, remained involved in Army doctrinal involvement after his retirement. He, along with retired General George Blanchard, the former commander of the U.S. Army in Europe, participated in the effort to foster inter-service cooperation over AirLand Battle. Despite their shared doubt "that the effort would result in significant change," they both reviewed the 1983 terms of reference that the Army and Air Force drafted to structure their cooperative plan, indicating the longevity of relationships and influence that DePuy had established as the TRADOC commander.[352] This outcome corresponds with Leach and Sabatier's finding that higher levels of trust correspond with those who plan to work together over a long period of time, with five years being a critical threshold.[353] Since the regular TAC-TRADOC discussions started in 1973 continued unabated through this era, a pattern of cooperation and the commensurate trust it engendered had been established at the initial release of the AirLand Battle operational concept in 1981, continuing in the 1982 version of FM 100-5.

Avoiding the conspicuously top-down approach DePuy initially adopted in creating the Active Defense doctrine, and matching the consensus-building approach Starry had taken to build acceptance of his FM 100-5 draft, Air Force and Army leaders started the process that led to the 31 Initiatives not by fiat, but by engaging small, empowered teams to investigate the key problems that needed to be solved for successful AirLand Battle implementation. After signing the joint memorandum of April 1983, they immediately commissioned a small, bi-service team of mid-level officers with extensive joint experience to undertake the intellectual heavy lifting

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[352] Davis, *The 31 Initiatives*, 36.
[353] William D. Leach and Paul A. Sabatier, "To Trust an Adversary: Integrating Rational and Psychological Models of Collaborative Policymaking," *American Political Science Review* 99, no. 4 (2005): 499.

that would be the foundation of the promised cooperative effort.[354] This approach mimics Leach and Sabatier's finding that "deliberations should begin with a period of 'joint fact finding' and consensus building on the basic dimensions" of problems under consideration.[355] As Davis recounted, the Joint Force Development Group (JFDG) formed on the basis of the 1983 agreements had twelve members, six from each service, and consisted of mid-level officers chaired by two colonels.[356] It differed from the constellation of commanders DePuy had assembled to write doctrine and "how-to-fight" manuals, but with the endorsement of both service chiefs, it remained sufficiently empowered to be effective.

Though ample evidence exists of cooperative inter-service momentum building of its own accord, a word of caution about attributing too much to these agreements is in order. Calls for defense reorganization that had long been echoing in Washington were gaining volume in the early 1980s. Congressional hearings revealed that the military was quite sensitive to the matter. Not only did a commission appointed by the Chairman of the Joint Chiefs, General David Jones, recommend several initiatives to "increase jointness" and "improve joint activities," it also acknowledged that any actions taken would "have maximum impact only if the civilian leaders—the President, the Secretary of Defense, and other Defense executives…—actively support the JCS organization and solicit and use its products."[357]

A realization that only well-publicized displays of jointness could stem the building tide of reform infected the Pentagon. Even the Navy, with its well-documented stance of defiance toward reform efforts, decided it could make a show of jointness for its own sake. For example,

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[354] Davis, *The 31 Initiatives*, 35.
[355] See Leach and Sabatier, "To Trust an Adversary," 499. Examining the matter from both rational-choice and social psychology disciplines they further found that while "interpersonal trust is not always essential for achieving cooperation or collective action, it is an important catalyst in a wide range of policy-making contexts;" see ibid., 491.
[356] Davis, *The 31 Initiatives*, 40.
[357] U.S. House of Representatives, Investigations Subcommittee of the Committee on Armed Services, *Reorganization Proposals for the Joint Chiefs of Staff*, 97th Congress, 2nd session, 21 April 1982, 702-09.

General Gabriel and Admiral James Watkins, the Chief of Naval Operations, signed a

memorandum of agreement on 9 September 1982. The memorandum addressed interoperability

between the Air Force's airborne radar platform (the AWACS) and the Navy's aviators, and had

a genuine rooting in pressing operational concerns, albeit a set that the services had already

learned to work around in the face of worldwide threats.[358] However, the repetition mul the word

'joint' in the title of a memorandum of agreement between the two service secretaries, "Joint

USN/USAF Efforts for Enhancement of the Joint Cooperation," reveals that the services

recognized a need to publicize to a wide audience any and all cooperation undertaken of their

own volition, if not perhaps also exposing some cynicism that the reform caucus had engendered

in the military.[359] Even between the Army and the Air Force, the effectiveness of their

substantial paper agreements must be subject to adjudication that measures the real changes or

advances in capability they brought about before drawing a conclusion about jointness.

1. Specific Entailments of the '31 Initiatives'
The Air Force and the Army announced the entire scope of the 31 Initiatives at a joint press

conference on 22 May 1984.[360] The body of work had proceeded rather quickly. Following the

signature of the Meyer-Gabriel memorandum in April 1983, General Wickham (by now the

Army Chief of Staff) and General Gabriel signed another agreement on 11 July 1983 that

pledged to "submit a single joint package for AirLand programs needed for the attack of enemy

follow-on forces."[361] This, in one move, tied AirLand Battle, a U.S. Army doctrine, to the

accepted NATO war plan for Central Europe and pledged the Air Force and the Army to work

together in the budget arena to gain funding for the initiative. It was a significant mutual

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[358] "Air Force and Navy Agree to Closer Ties," *Air Force Magazine*, January 1983, 30.
[359] Verne Orr and John Lehman, Jr., "Joint USN/USAF Efforts for Enhancement of the Joint Cooperation," (Washington DC: Department of the Navy and Department of the Air Force, 1982).
[360] Davis, *The 31 Initiatives*, 35. Navy and Air Force efforts to develop joint concepts never reached the level observed between the Army and Air Force during the same era.
[361] Ibid., 36.

commitment. Work on the 31 Initiatives commenced under the services' respective deputy chiefs for operations, Lieutenant Generals Fred Mahaffey (Army) and John Chain (Air Force), who in turn appointed Colonels Raoul Alcala (Army) and Howell Estes (Air Force) to draft the aforementioned terms of reference (TOR) for the inter-service discussions.

The TOR itself was a significant example of joint compromise and understanding, extending a vision of a tripartite battlefield composed of 'close' (formations engaging in close contact), 'rear' (behind friendly forces), and 'deep' (behind enemy forces) operations areas, with the close and deep battle areas divided into three zones based on distance. Zone 1 went from the line of close contact twenty kilometers past the enemy's front; Zone 2 picked up at the end of this boundary and extended 150-250 kilometers behind the front; Zone 3 continued 500-1,000 kilometers behind the enemy's forward-most troops. Each conceptual subdivision of the battlefield envisioned a specific type of battle and an appropriate level of command and control, with the greatest need for "integration and synchronization of friendly air and ground elements" occurring in the close battle area.[362] The TOR set the highest priority for force development to address a possible enemy breakthrough in Zones 1 and 2, and reemphasized a commitment to economic efficiency in the acquisition of systems that would be able to defeat projected Warsaw Pact capabilities in the 1990-1995 timeframe.[363]

The TOR was a closely held effort of Colonels Alcala and Estes, who had their work checked by a coterie of senior flag officers, but it in turn established the JFDG. The JFDG was critical for building continued trust between the services and imbuing the joint effort with credibility because its officers were both close to the tactics of their respective services and experienced in working inter-service matters in the Pentagon or at the field commands from

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[362] Wickham and Gabriel, "ALB Terms of Reference Memorandum," 3.
[363] Davis, *The 31 Initiatives*, 36-39.

which they were selected. The JFDG had two divisions, one to work on doctrinal matters and the

other for systems design. The group divided command, control, and force employment into

eleven mission areas that they then tackled in two- or three-person teams.[364] The protection given

the JFDG by the service chiefs, along with its 'low profile' while work was underway, freed it

from the high-level scrutiny that normally accompanied the tightly controlled, choreographed

process of coordination. Freed from the almost routine politics and parochialism of sensitive

Army-Air Force matters, the working group could make assessments based on effectiveness and

cost alone.[365] Just as the AirLand Battle operational concept and doctrine did not emerge via an

exclusively top-down process in the Army, neither did the 31-Initiatives process that adapted

those concepts for joint use.

The JFDG worked with intensity and presented its final report to the service chiefs on 22

March 1984. The report entailed thirty-two recommendations. All but one of these, a move to

fuse the tactical battlefield intelligence of both services, received approval on 23 April, then

acquiring the '31 Initiatives' moniker. Wickham and Gabriel also emphasized that the

completion of the JFDG report was not a terminus, but "an initial step in the establishment of a

long-term, dynamic process," and directed its presentation to the Joint Chiefs of Staff, Secretary

of Defense, combatant commanders, and selected members of Congress, notably the armed

services and appropriations committees.[366] Having cooperated on an inter-service effort at the

endogenous level over many years, the service chiefs made short work of presenting their efforts

to the meso-organizational and exogenous defense establishment. Their move reflects the bold

confidence of leaders who believed that their approach was appropriate for the existing threat

and domestic defense politics of the era.

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[364] Ibid., 40-41.
[365] Ibid., 43.
[366] Ibid., 45.

Somewhat predictably, the 31 Initiatives had a mixed reception. Joint force commanders were generally in favor of the collection of ideas, but special interests within the services had objections. The Military Airlift Command did not like the idea of giving Air Force special operations rotary-lift capability to the Army; TAC thought that an initiative on interdiction gave too much say to Army commanders; Army missile commanders feared losing their systems to the Air Force, to name a few examples.[367] The skepticism from within their organizations did not stop the service chiefs from announcing the scope of the initiatives process in triumphant tones at the conference in May. Some media reports highlighted the distrust engendered among these special interests, and critiqued the agreement for not addressing a glaring instance of duplicative capacity in the Air Force's fixed-wing CAS fleet alongside the Army's attack helicopters.[368]

Richard Davis' history of the 31 Initiatives provides a sketch of each effort; Table 3.2 (page 158) summarizes the subject area of each one. The broad areas and some standout cooperative efforts merit mention here as well. The series of initiatives on air defense accounted for both the Air Force's expertise in airspace control and added the Air Force's voice in the design of surface-to-air missile systems, previously an exclusive domain of the Army. The proposal even mandated the study of air defenses in general, allowing for the possibility of transferring the Army's missiles to the Air Force. General Wickham's approval of this proposal was surprising to many observers, but it met the Army's concern for guarding specific sectors according to their priority for the ground campaign. Conversely, the Air Force benefited from Army expertise in installation security via the initiatives centered on defense of rear areas, and was able to rely on Army assistance and training in an area for which it did not show great affinity. The first twelve initiatives reflected increasing inter-dependence between the services in

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[367] Ibid.
[368] Fred Hiatt, "Army and Air Force Chiefs Vow to Cooperate on Arms, Tactics," *The Washington Post*, 23 May 1984, A3.

their battle to defend Central Europe as well as compromise over issues spanning a spectrum from minor to quite contentious.[369]

Initiatives on the suppression of enemy air defenses (SEAD) reflected both a nod toward the Air Force's technical expertise in electronic warfare as well as the Army's desire to gain better targeting information about significant close-area threats. While removing the Army from the jamming business, these proposals were intended to tie the two services closely together in forming a unified targeting system populated by both tactical aircraft and ground-based weapons systems. The initiatives related to special operations forces (SOF) and search and rescue (SAR) took a comprehensive look at the interrelated capabilities of both services' special operations units. One of the most controversial of the initiatives was the proposal to rebalance SOF capabilities related to SAR and transfer SOF rotary-wing lift responsibility to the Army. Munitions initiatives expanded the range of existing Army artillery systems, but pledged to limit the acquisition of redundant systems by both services that could range the same targets.[370]

Among the most interesting initiatives—and those that would prove to have combat utility later—were those devoted to specific combined-arms battlefield tactics and systems. Initiative #20 established a standard for night combat proficiency that has shaped tactical-air power to the present day.[371] #21 solidified the concept of BAI, along with the new concepts of apportionment and allocation of air assets within a joint force. The procedures for BAI also promised to strengthen Army-Air Force cooperation at the command-and-control nodes critical for effective CAS and BAI employment, an area of chronic, historic weakness at the outset of conflict (see

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[369] Davis, *The 31 Initiatives*, 47-54.
[370] Ibid., 54-58.
[371] The re-release in 1982 and 1986 of a post-WWII study of enemy night tactics and its attendant recommendations for U.S. Army training is typical of the renaissance in night combat awareness that happened during the AirLand Battle era; see Alfred Toppe, *Night Combat* 1982 facsimile ed. (Washington DC: Center of Military History, 1953), foreword.

Appendix A). Along with separate initiatives on CAS, tactical air control party (TACP) procedures, and close support aircraft acquisition, the services took an ambitious step on paper toward cooperation on their most consistently volatile source of inter-service dispute.[372] The influence of the TAC-TRADOC dialogue, AirLand Battle, and 31 Initiatives are demonstrated with some clarity by BAI, because it is a concept that runs counter to Air Force doctrinal preferences and received pointed criticism from its first introduction as a joint term of art.[373] Further initiatives about air interdiction, the Joint Surveillance and Target Attack Radar System (JSTARS) aircraft, updates to the U-2/TR-1 aircraft, and airborne reconnaissance platforms completed the proposals related to weapons systems. Initiative #30 mandated closer cooperation on defining intra-theater airlift needs, an area second only to CAS in earning the Air Force accusations of underperformance from the Army.

In sum, the thirty battlefield-centric initiatives of the original 31 Initiatives (#31 was administrative in nature—a joint budgetary process for AirLand Battle programs) mandated greater interdependence of combat forces, requiring closer links between command-and-control organizations. The proposals were sweeping, upsetting several parochial interests within individual services, but for a time put an end to charges that the services had engaged in treacherous dealings with exogenous organizations to scuttle each other's weapons system programs.[374] This demonstrates the bold working mandate of the JFDG and the willingness of

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[372] BAI was a product of the TAC-TRADOC dialogues, and received ongoing criticism from Air Force experts, generally on the grounds that it subdivided the theater of battle unnecessarily and threatened to subvert the centralized control of air assets; see, e.g., Robert D. Rasmussen, "The Central European Battlefield: Doctrinal Implications for Counterair-Interdiction," *Air University Review* 29, no. 5 (1978): 11-13.

[373] Even the retired former TAC commander, General William Momyer, weighed in against BAI, arguing that if "carried to its logical conclusion, it means the Corps commander is directly concerned with any enemy formation no matter how far away, if it could eventually impact on the operations of his Corps—an absurd idea, I think one would agree;" quoted from Letter to Colonel Duncan R. McNabb; Doctrine Information Publication no. 10; Background Information on Air Force Perspective for Coherent Plans; HQ USAF/XOXID, Washington DC.

[374] In 1975, General DePuy wrote, "Somebody is giving the Secretary bad advice. Perhaps even malicious advice;" see Letter to Major General Gordon Sumner, Jr.; Folder: R-S-T; Box 8: TRADOC Commander's Conference, 1975;

the service chiefs to tolerate turbulence in their organizations to advance the goals of AirLand

Battle. Intentions, however, do not always match results. Analysis continues with an examination

of the implementation of the 31 Initiatives and the outcomes they attained.

2. Implementing AirLand Battle and the 31 Initiatives
Identifying the 31 Initiatives as the most visible embodiment of the joint cooperative effort

inspired by AirLand Battle, this investigation examined the scope of the organizational change

they effected as compared to the bold changes set forth on paper by the JFDG. Observations of

constructive joint behaviors are positive on balance, despite the recognition that some of the

more complex and contentious issues exhibited slower progress than the initial tranche of

quickly executed initiatives. Along with the other factors pushing inter-service cooperation, an

entrenched process of implementation and continued attention from service senior leaders drove

the initiatives the last mile to putting them in practice, normally the step that proves to be most

difficult in the administration of public policy.[375]

Evidence of cooperation visible in the public sphere did not diminish at all. To the contrary,

yet another joint-service agreement gained signature on 1 June 1984, one that established an

exchange officer program to have six officers each from the Air Force and Army serve on a

sister service's headquarters staff. The program's intent was to demonstrate ongoing

commitment to AirLand Battle concepts, attainment of "joint objectives," and the "free exchange

of ideas and concepts between the respective service staffs."[376] A joint assessment office

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The William E. DePuy Papers; U.S. Army Military History Institute, Carlisle Barracks PA, 1. Reprinted in Swain, *Selected Papers of General William E. DePuy*, 159-60.

[375] See, *inter alia*, Paul A. Sabatier and Daniel Mazmanian, "The Implementation of Public Policy: A Framework of Analysis," *Policy Studies Journal* 8, no. 4 (1980): 538; Paul A. Sabatier, "Top-Down and Bottom-Up Approaches to Implementation Research: A Critical Analysis and Suggested Synthesis," *Journal of Public Policy* 6, no. 1 (1986): 21-22; Berman, *The Study of Macro and Micro Implementation of Social Policy*.

[376] Fred K. Mahaffey and John T. Chain, "Memorandum of Understanding, Army/Air Force Exchange of Staff Officers," (Washington DC: U.S. Army and U.S. Air Force, 1984), 1.

followed to aid in implementing and monitoring the 31 Initiatives.[377] Davis recorded that this office enjoyed success in creating an implementation-tracking scheme and process that gained acceptance in the bureaucratic structure of the Pentagon. It successfully consulted with joint combatant commanders, and even assimilated additional initiatives (beyond the original thirty-one) from those audiences. The initial phase of the effort ran for thirteen months and witnessed twelve initiatives reaching "closed" or "implemented" status, which to the assessment office meant, respectively, complete intent with respect to the initiative had been reached or that an approved action plan for finishing the initiative was in place.[378]

The low-hanging fruit of initiatives that required little effort, engendered few disputes, and thus could be easily implemented ran out in September 1985, but progress did not stop. Davis characterized implementation between then and June 1986 as "faster" than the initial response, with another fourteen of the original initiatives reaching a "closed" or "implemented" status along with three additional initiatives that were added later.[379] The assessment office acted as a repository for additional AirLand Battle-based ideas from service staffs and unified commanders, providing a means to get the initiatives incorporated under the umbrella of the joint cooperative process, and demonstrated influence across the meso-organizational level.[380] Reflecting the origins of AirLand Battle and the 31 Initiatives within the TAC-TRADOC partnership, work on many of the initiatives continued within those two organizations, particularly with respect to the integration of air support into the land battle. While providing top-down leadership and tracking

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[377] Davis, *The 31 Initiatives*, 66.
[378] Ibid., 78-87.
[379] Ibid.
[380] The initiatives submitted later included: 32) improved procedures and organization for rapid targeting and intelligence sharing; 33) a review of the CAS and BAI mission areas and required aircraft (which led to the procurement of the A-10); 34) a system of exercises for evaluating the effectiveness of joint warfighting initiatives. Joint commands provided 32 and34; the comprehensive review of CAS originated with General Wickham as the Army Chief of Staff ibid., 68-69. The JFDG tracked these meso-organizational initiatives, fed them into the endogenous tracking process, legitimized them within the services, and ultimately ensured they were implemented.

of progress from a central Pentagon office, the implementation phase also contained a collaborative element, as responsible service commands received a say about how efforts within their respective bailiwicks should proceed. While this gave part of the bureaucracy a chance to lobby for the *status quo* in some areas identified for change, it also prevented the bureaucratic pushback against changes mandated from above.

The implementation effort witnessed significant inter-service coordination, including the establishment of joint tactics, procedures, and programs, along with the emplacement of plans for initiatives requiring effort over longer times. Significant planned service programs were cancelled or modified as a result of the joint process, allowing more than a billion dollars to flow toward other priority requirements. A May 1986 agreement on manned aircraft systems replaced the 1966 McConnell-Johnson agreement, representing the attainment of a point of equilibrium on the perennially contentious matter of duplicative air fleets. This agreement marked the first time the two services had signed a joint statement during a period of cooperation rather than a bout of visible inter-service rivalry. The most notable areas of cooperation were in new weapons systems (the JSTARS aircraft and JTACMS missile systems), combat inter-dependence (agreements on air-base ground defense and manned aircraft systems), and budgetary cooperation (bi-service participation in submitting program objective memoranda (POM) to the Defense Department).[381]

A few of the initiatives attracted interest beyond the original bi-service audience, and came to involve Navy and Marine Corps participation under the rubric of the endogenous coordination process. One example was cooperation on munitions development (#19), but the most promising all-service initiative from the period was #31, which had originally specified Army-Air Force budgetary cooperation. On 4 December 1984, following the lead of the bi-service agreement, the Navy and Marine Corps joined in the signing of a four-service agreement of mutual participation

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[381] Ibid., 80-83.

in service budgeting activities. The comprehensive agreement was slightly less ambitious in scope than the bi-service agreement, but pledged collaboration with respect to systems deemed essential to success in combined arms fighting. At its peak, the inter-service process developed to oversee implementation of the initiatives had tri-service support (Air Force, Army, and Navy) for inclusion in the curriculum of their senior professional military education schools. Meso-organizational participation gained momentum later in the implementation phase as well, with unified commanders providing another forty-four initiatives to the assessment office, further validating its utility as a clearinghouse for joint concepts despite its status as an endogenous (i.e., not formally joint) organization.[382]

A relatively small handful of issues reflected substantial deviation from the original intent of the initiative or outright failure. The Precision Location Strike System (PLSS) fell victim to cost overruns, precluding the intent of initiative #14 to share its data with Army units.[383] Rotary wing lift for SOF proved too politically contentious, and became part of a larger conversation about SOF in general, negating the intent of #17. The addition of another initiative by the Army (independent from the original set) for a comprehensive CAS review begs the question of whether the three initiatives pertaining to CAS and BAI inspired sufficient confidence, and the question of whether the 31 Initiatives had a material effect on CAS capability is evaluated later

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[382] Ibid., 83-87.

[383] PLSS had started in 1979, predating AirLand Battle and the 31 Initiatives, but it was a direct outcome of the TAC-TRADOC dialogue. The system was to be mounted on TR-1 aircraft flying over Central Europe, which would provide a constant monitoring, early warning, and targeting capability to NATO forces of enemy radars and jammers; see Futrell, *Ideas, Concepts, Doctrine Vol. 2*, II, 1961-1984, 546. General Creech analogized that PLSS was to ground threats what the AWACS was to air threats; U.S. House of Representatives, Subcommittee of the Committee on Appropriations, *Department of Defense Appropriations for 1982*, 97th Congress, 1st session, 1981, 32-33, 345. Though PLSS did not come to fruition, JSTARS provided a view of the vehicles that PLSS targets would protect, and Davis noted that "the joint targeting concepts of the initiative had already taken hold;" Davis, *The 31 Initiatives*, 74. The survivability of JSTARS without PLSS in an intense Central European battle was in doubt, but never saw battle over contested airspace; modern methods of surface-to-air missile suppression have superseded the technologies upon which PLSS was based; see Lionel S. Johns et al., "Technology Issues: Reconnaissance, Surveillance, and Target Acquisition to Support Follow-On Forces Attack," in *New Technology for NATO: Implementing Follow-On Forces Attack* (Washington DC: Office of Technology Assessment, U.S. Congress, 1987), 149-50.

in this chapter. Though special interests, operational challenges, and complexity conspired to blunt the intent of some of the 31 Initiatives, AirLand Battle's bi-service support at the highest levels of the endogenous establishment gave it effective clout in that realm, and its implementation procedures also became accepted by the most influential figures in the meso-organizational stratum—the joint combatant commanders.

Endogenous and meso-organizational dynamics were not the only factors in play, though. This chapter earlier examined some of the service-culture barriers to adopting sweeping change based on a new doctrine, particularly within the Air Force. Though AirLand Battle as the Army's overarching doctrine received observably more support than had its predecessor, criticism of its underlying ideologies continued. Attacking from the other side of the attrition-maneuver spectrum (though with less ardor than Lind), Herbert London questioned whether deep attacks of the kind envisioned in AirLand Battle were viable given the politics of NATO and the desire to avoid quick escalation to nuclear conflict.[384] London's critique of AirLand Battle was gentle overall, however, and may have reflected a broader agenda. At this point, the question of one source of exogenous pressure on the inter-service cooperative effort merits more attention, including a closer look at the motivation for books like London's.

a) Implementation Subtext: Congressional Pressure
Harold Winton asserted that the AirLand partnership "was not foisted on the services by outside pressure for greater joint cooperation," and noted that the relationship had its roots in the mid-1970s, more than a dozen years prior to the passage of the Goldwater-Nichols Act.[385] This analysis is correct inasmuch that Congress did not order TRADOC and TAC to cooperate, nor did it explicitly guide the general nature of the Army-Air Force relationship that developed after Vietnam. In this instance, as in most military affairs, Huntington's description that "Congress

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[384] London, *Military Doctrine and the American Character*, 29.
[385] Winton, "Partnership and Tension," 113.

existed off to the side, an ever present threat to the symmetry and order of the military hierarchy" held true.[386] In the absence of evidence of direct influence in the form of passed legislation, though, the influence of congressional and other exogenous influences deserve a closer look throughout AirLand Battle's life span. An area that demands analysis in depth is the interplay between AirLand Battle and the congressional reform caucus, which traces its roots well prior to passage of Goldwater-Nichols. The examination of periodic defense spending bills, both the content of the bills and the opinions revealed in related hearings, also helps to illustrate the tenor and scope of congressional involvement.

Judging Congress to have negligible impact on AirLand Battle based upon the date of passage of the Goldwater-Nichols Act probably reflects a flawed logical approach. James Lindsay and Randall Ripley argued that the study of defense legislation passed by Congress is an ineffective means of analyzing its influence on military matters, as it would lead one to conclude, "Congress does not appear to matter much."[387] They found that more accurate measures of congressional influence exist in the way it creates situations that drive executive response, the changes it induces in executive decision-making processes, and the way it frames defense policy issues.[388] It is in these latter arenas of influence that this study found relevant congressional influence on AirLand Battle. Richard Davis wrote that part of the impetus for the Army and Air Force pursuing their thirty-one initiatives based on AirLand Battle was that the "public, *the Congress*, and the DoD had consistently pressured the armed services to cooperate fully and to avoid wasteful duplication."[389] Romjue noted that the Army briefed G. William Whitehurst and Newt Gingrich, "both members of the Congressional Reform Caucus," establishing that AirLand

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[386] Huntington, *The Soldier and the State*, 259.

[387] James M. Lindsay and Randall B. Ripley, "How Congress Influences Foreign and Defense Policy," *Bulletin of the American Academy of Arts and Sciences* 47, no. 6 (1994): 8.

[388] Ibid., 8-9.

[389] Davis, *The 31 Initiatives*, 36 (emphasis added).

Battle briefings "informed influential Congressional and Administration [*sic*] officials about the doctrinal developments accompanying the transition to *Army '86* and the new weaponry coming into production and deployment."[390] While this was no doubt a solid political strategy for the advancement of the Army's interests, Romjue failed to point out that a partial impetus for the display of inter-service jointness might have been to convince the caucus that it did not need to take significant further action. A *New York Times* feature on AirLand Battle drew an explicit connection between the new doctrine and the caucus, asserting that "[m]any of these changes have been urged by the military reform movement" before naming Senator Gary Hart, Senator Sam Nunn, and Representative Newt Gingrich as the movement's main leaders.[391]

There is evidence that the meso-organizational and endogenous components of the defense organization were well aware of a perceived jointness problem on Capitol Hill and that they wanted to shape the debate about potential reform. A 1984 memorandum circulated among the Joint Staff that called for better, faster advice to the national command authority and gave less leverage to service-specific interests in shaping counsel.[392] Jeffrey Donnithorne cited an uncanny proximity between the date DoD provided Congress its own draft legislation for defense reform and the memorandum of understanding that led to the Army-Air Force cooperation on initiatives under the rubric of AirLand Battle—both documents were released in April 1983.[393] Colonel Raoul Alcala, who as Chief of the Doctrine, Concepts, and Systems Integration division for the Army's Deputy Chief of Staff for Operations and Plans (DCSOPS) drafted the TOR and led the

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[390] Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*, 66.
[391] Deborah Shapley, "The Army's New Fighting Doctrine," *The New York Times (Sunday Magazine)*, 28 November 1982, 262-63.
[392] Joint Chiefs of Staff memorandum—"Subject: Improving the Quality and Timeliness of JCS Advice/Responses"; Box 10; OP-60 files; Naval History and Heritage Command Archive, Washington Navy Yard. Donnithorne, "Principled Agents," 343.
[393] "Principled Agents," 344-45.

Army's half of the JFDG, confirmed the idea that the services wanted to gain maneuvering space with respect to defense reform and put their own stamp on impending changes.[394]

Chronicling the passage of Goldwater-Nichols from the perspective of a Senate Arms Services Committee (SASC) senior staffer, James Locher gave an even clearer picture of General Wickham's possible motivation. While Wickham had a "reputation for courtesy and graciousness," Locher gave account of a pedantic response from the general, characterized by "huffing and puffing," in which he flung vitriol upon the draft legislation at a meeting in the Pentagon with Senators Barry Goldwater and Sam Nunn in February 1984. Wickham delivered a "lengthy harangue" to the Senators and emboldened some of the other service chiefs present to display behavior bordering on disrespect, which in turn elicited a stern response from the legislators and, as Locher portrayed it, solidified them in their convictions that DoD required major reforms no matter the political cost.[395] While it is too much to say that congressional pressure alone drove Wickham and Gabriel to continue the Army-Air Force cooperative efforts underway when they became service chiefs, Wickham's clear opposition to externally driven reform suggests that it was a factor.

Another example of pre-Goldwater-Nichols congressional influence on AirLand Battle was the publication of a preface to an academic treatment of the subject in 1984. Senator John Tower, generally considered to oppose efforts toward defense reform, then chaired the Senate Armed Services Committee.[396] His introduction to London's book on AirLand Battle seems innocuous

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[394] Raoul Alcala (Colonel (ret.), U.S. Army; former Chief, Doctrine, Concepts, and Systems Integration Division, Deputy Chief of Staff for Operations and Plans), personal interview with Jeffrey Donnithorne, 13 February 2013.

[395] Locher, *Victory on the Potomac: The Goldwater-Nichols Act Unifies the Pentagon*, 4-8.

[396] In reality, Anne Marie Getz and others have portrayed Tower as being reactionary on the topic, as his initial position during the GNA discussions was not to advance reform toward greater joint authority under a unified defense department, but rather to return to the WWII structure wherein the service chiefs worked directly for the President with no intermediaries. Tower retreated from this position, finding it "intellectually indefensible" as the SASC hearings he initiated on the topic proceeded, but he continued to identify with anti-reform members of the military and never became a proponent of the reforms that were the essence of the 1986 law; @139

at first blush; he promoted a holistic consideration of defense issues, focusing on training and doctrine instead of only the major weapons systems that dominated the defense conversation of the day.[397] In the subtext of Tower's opposition to defense reform, however, AirLand Battle was a proxy that served as a Senator's proof of the military establishment's ability to reform itself. In the foreword to the same book, Frank Barnett put a finer point on the matter, citing the paucity of attention that would-be reformers had "given to the doctrinal and training innovations which have been instituted by the military themselves."[398] If the scope of jointness issues about which he became aware prevented Tower from advocating for a return to the pre-WWII system of dispersed military authority, his embrace of AirLand Battle was proof that he would support the *status quo* and not push for further reforms.

An absence of discussion can reveal as much about what legislators deem important as those topics that dominate the record. Hearings for defense spending bills through the mid-1980s made frequent, uncritical reference to AirLand Battle as an organizing concept.[399] Later in the decade, however, lawmakers put explicit language in legislation demanding that AirLand Battle, Follow On Forces Attack, and other Cold War concepts for the European battle be reconsidered in light of the "full implementation of the unilateral force reductions in, and subsequent reorganization of, forces of the Soviet Union described by the President of the Soviet Union on December 7, 1988, and the unilateral force reductions subsequently announced by the other members of the Warsaw Pact."[400]

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[397] See Senator John Tower's preface to London, *Military Doctrine and the American Character*, ix-xi.
[398] See Frank Barnett's foreword to ibid., vi-viii.
[399] See, *inter alia*, U.S. House of Representatives, Committee on Armed Services, *Hearings on H.R. 5167, Department of Defense Authorization of Appropriations for FY85 and Oversight of Previously Authorized Programs (Witness Panel #5)*, 98th Congress, 2nd session, 7-8 March 1984, 516-768.
[400] *National Defense Authorization Act for Fiscal Years 1990 and 1991*, Pub. L.No. 101-2461, 101st Congress, 1st Session (6 December 1989), Title IX, Section 901.

After appearing regularly since 1984 in the *Congressional Record*, the last reference to AirLand Battle happened in 1992.[401] Even that was a passing mention in a tribute dedicated to the recently retired Army Chief of Staff General Carl Vuono. The last material statement about the doctrine appeared in 1989, the aforementioned direction to study how it must change in light of the enemy's unilateral stand-down.[402] By 1992, Congressional comments show a return to almost exclusive concern with specific weapons systems rather than the organizational structure of U.S. military forces or doctrine. After Desert Storm, in the face of impending and continuing defense post-Cold War budget cuts, representatives made on-record mention of weapons systems such as the *Apache* attack helicopter, the A-10 CAS aircraft, and JSTARS surveillance aircraft.[403] This marks a return to familiar territory, with "marquee items…taking up most of the debate about defense acquisition."[404]

Considering the congressional subtext of defense reform on AirLand Battle is revealing on several theoretical fronts. It shows that there was some bureaucratic wrangling behind the scenes, but that this pushed at least two of the services toward more jointness than they might have pursued under more neutral conditions. Put another way, two services became *more* joint in trying to *resist* the congressional concept of jointness that might otherwise be forced upon them. Where was the Navy during the larger defense reorganization discussion? Did they respond to legislative pressure with a similar maritime initiative? As Donnithorne summarized it, "[t]he

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[401] Sam Nunn, (102nd Congress, 1st session) "Tribute to Gen. Carl E. Vuono," *Congressional Record* 137, no. 121 (1991): 11998.

[402] An "Airland" subcommittee has met regularly under the auspices of the Senate Armed Forces Committee since 1997, but has concerned itself with Army and Air Force equipment modernization rather than the doctrine that became its namesake; see Daniel R. Coats, (105th Congress, 1st session) "National Defense Authorization Act for Fiscal Year 1998-Conference Report," *Congressional Record* 143, no. 154 (1997): 11840.

[403] Dennis W. DeConcini, (102nd Congress, 2nd session) "Additional Statements," *Congressional Record* 138, no. 102 (1992): S9956.

[404] Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 65.

Navy's overall posture…remained steadfastly opposed to reform."[405] Led by Secretary of the

Navy John Lehman, the service elected to rail against the DoD bureaucracy as a scapegoat for

military inefficiency, and entertained no suggestion of further unification or other reforms being

discussed.[406] The overall response served as a great example of the Navy having earned its

"Defiant" moniker on Capitol Hill. It also shows how a single congressional input (i.e., defense

reform) can have disparate effects on the services. In the case of the Army and the Air Force, it

likely had some part in encouraging sincere efforts at joint cooperation. For the Navy, it

hardened a suspicion of centralized control into yet another minor open rebellion. In 1992,

Congress' renewed attention on specific weapons systems replaced any significant interest in

command-and-control methods that had marked the run-up to Goldwater-Nichols. The return to

Congress' traditional concerns with *means* and its relative neglect of *ways* offers another

explanation for why Air Force-Army cooperation diminished after the Gulf War.

    Tracing congressional influence along with the effectiveness of the 31 Initiatives forces

consideration of another question. While there is little doubt that the services sought to project

the appearance of jointness in the lead-in to Goldwater-Nichols for Congress' benefit, the record

of implementation of their internal program for joint cooperation lacks some of the luster of the

accompanying public relations effort. At least two explanations present themselves. On one hand,

the services could have been behaving cynically all along, flaunting a visible program of

cooperation to answer criticisms of the defense reform caucus while allowing joint initiatives to

fade away over time. Another idea is that subsequent leadership lacked the political will or skill

to continue advancing the initiatives, and that normal bureaucratic politics again became the

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[405] Donnithorne, "Principled Agents," 346.

[406] James Locher detailed how Lehman put a "spy" in the Heritage Foundation to quash pro-reform articles from being published; see Locher, *Victory on the Potomac: The Goldwater-Nichols Act Unifies the Pentagon*, 172-76. Lehman took to the offensive in the press, castigating the OSD bureaucracy as "unaccountable" and worth of mass dismissal; "Navy Secretary Strafes Bureaucrats," *The Washington Post*, 5 March 1983.

dominant dynamic. The former explanation makes the entirety of AirLand Battle and associated

efforts an elaborate example of deliberate preemptive shirking by a subordinate agent to fight

Congress in its control of the U.S. military—it is an agency-theory horror story. It is unlikely that

false motivation could maintain an effort that unfolded over more than a decade, and the

initiatives that came to fruition were both productive efforts toward jointness as well as

remarkable examples of cooperation on their own right. A pass with Occam's razor leaves one to

conclude that the bureaucratic politics explanation is more plausible. Fortunately, that view is

more palatable from an American viewpoint of civil-military relations as well.

b) Implementation Subtext: Academic Commentariat
The role of academe in advancing AirLand Battle merits mention because it is in view

throughout the doctrinal development process, and academics who rotate between an executive

administration's advisory positions and Washington think tanks remain a prominent fixture in

any discussion of military jointness. John Mearsheimer had criticized a concept he labeled

"Mobile Defense" and defended Active Defense in the early 1980s, arguing that Active Defense

was a reasonable strategy to defeat the Warsaw Pact, but more so that the former doctrine was

too abstract to be successfully explained to the Allies or executed in the event of Soviet

aggression.[407] Press accounts of AirLand Battle revealed "misgivings among West German

officers and military authorities" because of its shift away from "the accepted concept of massed

artillery and air power used against waves of Soviet tanks and infantry" and its failure to defend

German frontier territory.[408] Herbert London's analysis, described earlier, argued that the whole

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[407] Mearsheimer called a proposed "Mobile Defense" (which contained many principles in common with AirLand Battle) a potential "recipe for disaster;" see John J. Mearsheimer, "Maneuver, Mobile Defense, and the NATO Central Front," *International Security* 6, no. 3 (1982): 107-09.
[408] Drew Middleton, "Army Moves to a Strategy Stressing Offense," *The New York Times*, 15 April 1984, 6.

need for a new strategy was that Soviet nuclear parity, reached in the 1970s, exploded the myth of an "ambiguous balance," revealing "clear Soviet superiority."[409]

Thus the role of academic critique shows itself to be of mixed utility, though it always has a central role in describing, if not shaping, questions about joint cooperation. Lind's critique of Active Defense did much to usher in its replacement. London's description of AirLand Battle, if indecisive as a single salvo in a broader attempt to stop defense reform, further entrenched the concept in the ongoing exogenous conversation about defense policy. Mearsheimer's critique and others like it forced AirLand Battle to adopt as its own some pre-existing conditions of the defense strategy worked out by NATO, muting some of the offensive flavor that enthusiasts embraced. The doctrine walked a fine line between its own ideals of 'offense as defense' that answered American complaints against Active Defense and the more static, prepositioned resistance dictated by European politics, but it managed to blend questionable ideas with accepted norms to a degree that allowed it to satisfice the demands of both audiences. Perhaps the boots symbolizing combined cooperation did not gleam as much as the joint pair, but sometimes just being the right shade of black suffices in an alliance that faces a substantial existential threat. Would-be practitioners of jointness may take a lesson about academia's role in tearing down or building up ideas about defense around which effective coalescence can occur.

c) Implementation Subtext: Defense Budget
A distinguishing aspect of the defense environment during AirLand Battle's period of influence was a lack of budgetary pressure. From 1980 to 1987, the overall defense budget grew by approximately forty percent.[410] During the same period, the size of the military population grew

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[409] London, *Military Doctrine and the American Character*, 27.
[410] Measured in 2005 dollars, 1980 defense spending was $325.1 billion and 1987 defense spending was $456.5 billion, an increase of 40.1 percent; see Greg Schneider and Renae Merle, "Reagan's Defense Buildup Bridged Military Eras," *The Washington Post*, 9 June 2004, E1. http://www.washingtonpost.com/wp-dyn/articles/A26273-2004Jun8.html.

by less than five percent, which meant that the bulk of spending was available for additional weapons system acquisition, modernization, and training.[411] The growth of the defense budget followed some trends that had been building over previous administrations. Though Secretary of Defense James Schlesinger had advocated in the mid-1970s for an increase in conventional defense capabilities and for NATO to contribute more in that area, he was unsuccessful in lobbying Congress for funding to support his initiatives; President Ford eventually dismissed him over inter-personal tension, his conflicts with then-Secretary of State and National Security Advisor Henry Kissinger, his skepticism over détente, as well as his stridency on defense budget matters.[412] Donald Rumsfeld sought to advance Schlesinger's initiatives in his first stint as Secretary, but the limited time he had available and the change of administration limited his ability to do so.[413] The effect was to keep the size of the military population steady at its post-Vietnam drawdown levels.

The entirety of the national-level 1970s defense debate after Vietnam was dominated by questions of strategic security: in general, missile deployment, bomber capability, and the nuclear triad received more attention than conventional forces. The Carter administration focused on cutting the defense budget through its first two years before making a slight reversal of the trend in its waning months. Against an oversized Soviet force, these constraints required creativity of doctrine and warfighting technique rather than reversion to the American tendency

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[411] The 1980 active duty military population was 2.05 million people while the 1987 figure was 2.17 million; see Bernard Rotsker, *Right-Sizing the Force: Lessons for the Current Drawdown of American Military Personnel* (Washington DC: Center for a New American Security, 2013), Working Paper, 13; "Active Duty Military Personnel, 1940-2011," accessed 30 March 2014, http://www.infoplease.com/ipa/A0004598.html.

[412] See, *inter alia*, Robert D. McFadden, "James R. Schlesinger, Willful Aide to Three Presidents, Is Dead at 85," *The New York Times*, 28 March 2014, A18; Leslie H. Gelb, "Ford Fires Schlesinger, Colby," *Pittsburgh Post-Gazette*, 3 November 1975; "James R. Schlesinger," Department of Defense Historical Office, accessed 21 March 2014, http://history.defense.gov/schlesinger.shtml.

[413] See, e.g., "Donald H. Rumsfeld (Gerald Ford Administration)," Department of Defense Historical Office, accessed 21 March 2014, http://history.defense.gov/rumsfeld.shtml; Robert D. Kaplan, "What Rumsfeld Got Right," *The Atlantic*, July-August 2008, 65-66.

to match force with force through numbers and brute firepower. Though one could have reasonably expected the size of the military to grow markedly during the Reagan-Weinberger years, a tacit restriction on the number of military personnel remained largely in place, and growth was only modest. Accelerated spending occurred in different areas of the defense budget; ships, missiles, aircraft, and the Strategic Defense Initiative were notable areas that saw increased funding. This decision reflects a conscious political effort to stimulate the defense industry. Weinberger also became known for his six-part test for committing U.S. forces to combat, a restrictive standard that tended to limit the demand for more troops.[414] It also reflected a broader U.S. historical trend of suspicion and avoidance of large standing armies.

d) Implementation Context: Military Critique of AirLand Battle as a Mature Doctrine
The 1982 version of FM 100-5, with its centerpiece of AirLand Battle, did not put to rest all criticism of Army doctrine. Robert Leonhard penned a scathing tome that charged the Army with enduring devotion to the "sanguinary" principles of attrition warfare, giving air power a failure-prone "exaggerated role" in the doctrine, and relying too much on flawed simulations of Soviet tactics in wargaming computer models, among other things.[415] A new edition of FM 100-5 duly appeared in 1986, but it was still unmistakably AirLand Battle doctrine throughout. The funeral dirge for AirLand Battle would not come primarily from internal service-doctrine critics, but rather a host of other changing outside circumstances. The next section discusses the practical tests AirLand Battle experienced while it was the dominant idea in U.S. defense policy, putting on exhibit its successes and failures with the aim of further exposing the conditions and mechanisms that permitted joint cooperation under its organizing principles.

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[414] Impressions that the Weinberger Doctrine limited the growth of the military or its use may have been rooted more in interpretation than intent; see, e.g., Gail E.S. Yoshitani, *Reagan on War: A Reappraisal of the Weinberger Doctrine* (College Station TX: Texas A&M University Press, 2011), xi-xiv.
[415] Leonhard, *The Art of Maneuver*, 4, 135-55, 61.

3. Testing AirLand Battle
a) Evidence of Success
Regardless of how one views the severity of disconnects between the rhetoric of AirLand

Battle's operational concept and the inter-service cooperative agreements put in place by the 31

Initiatives, the effect on jointness did not stop in the mid-1980s. Beyond the services' efforts to

implement a discrete plan, other lasting joint advances occurred.

i. A Return to 'Operational Art'
Shimon Naveh argued that operational art as a discipline had been lacking in the U.S. since

WWII, and that its return via AirLand Battle marked a true revolution in military thinking.[416] If

imitation is the sincerest form of flattery, the Soviet Union paid AirLand Battle a compliment

soon after it was unveiled by mirroring the doctrine in its own "Operational Maneuver Groups,"

which the Western intelligence committee assessed would specialize in deep thrusts against

NATO's rear support and supply areas.[417] Consideration of operational art continues to dominate

joint and service doctrine discussions today, making it a welcome intellectual contribution of the

AirLand Battle era.

ii. ALFA/ALSA as an Enduring Joint Organization
The TAC-TRADOC dialogue that General DePuy initiated in 1973 received organizational

manifestation as the Air-Land Force Application (ALFA) Center on 1 July 1975. ALFA

continued to host many of the important inter-service discussions about AirLand Battle during its

era of importance, and did not disappear after AirLand Battle faded from view. Instead, ALFA

became a new organization called the Air Land Sea (ALSA) Center on 1 August 1992, and

incorporated Navy and Marine Corps membership to make it an all-service joint cooperative

organization. ALSA remains a source of joint doctrine as well as a clearinghouse for multi-

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[416] It borrows the word "systemic" from Shimon Naveh, who argued that a Kuhnian revolution in military thinking had occurred because of the material conditions in modern war, requiring that they be thought about in systems-theoretical terms. Naveh also advanced the argument that operational art had been neglected in the U.S. since WWII; see, e.g., Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory*, xvi, 1-3, 287-92.
[417] Drew Middleton, "U.S. Developing Flexible Battlefield Strategy," *The New York Times*, 13 March 1983, 12.

service techniques, tactics, and procedures manuals for employment of air power functions. Given the minor importance services put on joint doctrine relative to service doctrine, and given the wide acceptance of the joint tactics that ALSA releases within the communities it influences, the latter contribution is arguably more important. Either way, this artifact of AirLand Battle collaboration has endured and remains a viable contributor to jointness.

Here it is fitting to bring up the effect of geographic proximity on jointness as well. TRADOC, at Fort Monroe, Virginia, was just miles away from TAC headquarters, located at nearby Langley Air Force Base. If not inevitable, a TAC-TRADOC partnership was certainly easily built. By contrast, the nominal home for Air Force-wide doctrine is located at Maxwell Air Force Base, near Montgomery, Alabama, home to the service's educational facilities for active-duty personnel.[418] The Air Corps Tactical School, responsible for developing the strategic bombing doctrine that held so much sway during WWII, was located at Maxwell; legacies like this (and the golden handcuffs of years of congressional pork) remain the impetus for retaining the service's doctrine center there today. The setting is bucolic to the extent that central Alabama can be, and perhaps ideal for reflection and academic study, but the geographic separation seems to be reflected in an intellectual separation from Washington politics and the larger Air Force, putting a barrier between the ideas Maxwell germinates and the audiences for whom those ideas are intended. There is little surprise that the Army found it easier to work with a sub-group of the Air Force located nearby its more central doctrinal center than with the Air Force as a whole, and it was not solely because Air Force doctrine beggars change.

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[418] This happened only in the late 1990s with the establishment of the Air Force Doctrine Center. Previously, doctrine resided with the Air Force's Operations Directorate in the Pentagon, although the College of Aerospace Doctrine, Research, and Education (CADRE) at Maxwell helped write it. More germane is the fact that the Army has a four-star command for which one of the primary functions is to reconsider and rewrite Army doctrine to fit the current security climate. The Air Force is more stable in its core beliefs about victory in war and therefore less prone to the introspection demonstrated by the Army.

iii. Apportionment and Allocation: A Common Vocabulary for Air Operations
One of the most useful practical successes from the AirLand Battle dialogue process was the

arrival by the services at a common definition of the terms *apportionment* and *allocation*, which

as terms of art still describe the distribution of limited aviation assets. Apportionment is the

"determination and assignment of the *total* expected effort expressed in a percentage or priority,"

a decision that falls to a joint force commander in current U.S. doctrine.[419] Allocation is turning

the apportionment decision into a tangible number of sorties for execution, which is a role

handled by the air component commander.[420] Thus, terminology originally established over a

topic that is controversial every time the services go to war together has endured for almost a

quarter-century without significant dispute.

The central joint tenet to arise from AirLand Battle was recognition that, to minimize

duplication and maximize efficiency, both the Army and the Air Force needed to participate in

target nomination, prioritization, and execution in a way that used both services' inputs and

resources. This led to a common vocabulary and concept for making these decisions in a

structured combat environment led by a joint force commander, which was a success. It also led

to in-depth discussions about the joint command-and-control organizations and systems required

to effect the outcomes these terms represented. As later discussion will reveal, the progress here

was more of a mixed result, one in which the participating services exhibited a dearth of

confidence.

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[419] "Joint Publication 3-30: Command and Control of Joint Air Operations," (Washington DC: Joint Chiefs of Staff, 2014), x. For the history and definition of the terms, see Cardwell, *Airland Combat*, 34n.
[420] "Joint Publication 3-30: Command and Control of Joint Air Operations," III-17.

iv. Operation Desert Storm Deep Battle

Since there was no Soviet invasion of Central Europe in the 1980s, AirLand Battle never

received a test from the threat that inspired it.[421] It does, however, receive broad credit for

posturing the U.S. military for its quick, lopsided victory over Saddam Hussein's forces in the

first Gulf War. The descriptions of the strategy for executing the first war against Iraq from

General Colin Powell and Secretary of Defense Dick Cheney made reference to AirLand Battle's

rapid, armored thrusts.[422] Military historian Conrad Crane offers Operation Desert Storm as

"evidence of its success."[423] Rick Atkinson's widely cited history paints AirLand Battle as "best

suited to armored warfare in the open desert," as no other type of battlefield terrain "on earth

allowed a commander to look deeper, move quicker, or seize initiative faster."[424] It is clear that

the scheme of operations for Desert Storm borrowed from a cognitive framework informed by

thinking about AirLand Battle. General Norman Schwarzkopf's battle plan involved deep

maneuver, including the use of air power for deep strike well prior to the beginning of the ground

war. He eschewed a static battle of attrition in favor of one that moved rapidly to outflank and

cut off retreat options for the Iraqi Army entrenched in Kuwait. The battle plan was full of

arrangements to "delay, disrupt, or destroy the enemy's potential before it [could] be used

against friendly forces," including the Scud hunting in the western desert and efforts to ensure

that reinforcements could not flow south from their positions around Baghdad.[425]

Benjamin Lambeth summarized the 29 January 1991 Battle of Khafji, twelve days into the

air campaign of Desert Storm, as an air power attack against a secondary column of Iraqi armor

that decimated the column before it could reach its objective or make contact with allied

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[421] This statement excepts internal military actions within the Soviet bloc, such as the imposition of martial law in Poland on 13 December 1981 in response to the Solidarity labor union movement.

[422] Michael R. Gordon, "Ground Strategy: Focus on Rear Line," *The New York Times*, 17 February 1991, 1.

[423] Emily Langer, "Four-Star General Developed Cold War Strategy," *The Washington Post*, 2 September 2011, B8.

[424] Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (Boston: Houghton Mifflin, 1993), 253.

[425] This terminology reflects the ideas of "deep attack, extended battlefield, follow-on forces attack, [and] joint interdiction" that informed AirLand Battle; see Cardwell, *Airland Combat*, 101.

forces.[426] The sensor capability afforded by the JSTARS aircraft allowed the U.S. and its allies to see the column movement deep in enemy territory, and a combination of precision and ballistic munitions allowed for lethal engagement, with the air-component forces diverting from their pre-planned missions to destroy over 600 Iraqi vehicles and artillery pieces.[427] This anecdote could not offer a clearer illustration of AirLand Battle's more salient points.[428] A deep picture of the battlefield, including one that took into account enemy follow-on force movements over time, allowed the flexible targeting of enemy forces as they flowed toward the front, but before they could mass to become an overwhelming force. It was a textbook application of AirLand Battle, albeit against a much smaller and less sophisticated enemy than that the doctrine originally envisioned a decade prior.

The circumstances of the Iraqi-U.S. engagement prevent complete validation of all the praise that has been heaped upon AirLand Battle's role in bringing about a decisive 'win' in 1991. Robert Scales' account claimed that the Army since 1973 was a new organization, one that emphasized defeating an enemy first by intellectual capability rather than simply accumulating more firepower.[429] While it is true that the Gulf War campaign employed operational art and maneuver warfare concepts aided by technological and doctrinal advances, the huge military buildup that occurred in the Persian Gulf prior to the commencement of military operations as well as the ease of movement afforded by open desert terrain both serve to temper any claims

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[426] Benjamin S. Lambeth, "AirLand Reversal," *Air Force Magazine*, February 2014, 61-62.
[427] Ibid.
[428] The central idea in the article was that air power had supplanted ground power as the primary means of destroying enemy targets and that the primary role of ground forces was to "do most of the shaping and fixing" of enemy forces to allow their destruction by air power; ibid.
[429] Scales, *Certain Victory: The U.S. Army in the Gulf War*, 36n.

that the Gulf War marked a complete abandonment of the American predilection for advancing

on an enemy with enough firepower to simply overwhelm the opposing force.[430]

b) Evidence of Failure
i. Inter-Service Rivalry in Wartime
The U.S. military intervention following the Iraqi invasion of Kuwait in late 1990 offered a

chance to test almost every aspect of AirLand Battle's operational concepts, but it first offered a

chance to see if the idealism reflected in optimistic joint proclamations could endure in actual

combat. The Air Force had an opportunity, via a pre-invasion 'air campaign' to soften Iraqi

resistance, to lead off with a show of deep interdiction capability. In some ways, the campaign

prior to the commencement of ground hostilities signaled a departure by the Air Force from its

commitment to joint action. Conceived by Air Force officers who believed in an independent-

action theory of air warfare, the Desert Storm air plan would have, had it been executed as

offered, attempted to destabilize the Iraqi government, defeat its fielded forces, and destroy any

remaining resistance to coalition demands, almost completely by itself. The high expectations of

air-power capabilities from its proponents—and inter-service resentment of the lofty hopes

inspired—appeared even before the war started. Secretary of Defense Richard Cheney removed

General Michael Dugan from his post as Air Force Chief of Staff after a series of comments to

media traveling with the general in Saudi Arabia.[431]

Dugan's insistence that air power was "the only answer available to our country in the

circumstance" recollected the brashness of non-joint independent-action theories about air power

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[430] As Francis Park argued, though there was a renewed focus on operational art up to that point, the Gulf War marked a reversion to tactics over operational art; see Francis Joon Hong Park, "The Unfulfilled Promise: The Development of Operational Art in the U.S. Military, 1973-1997" (Doctoral Dissertation, University of Kansas, 2012), ii.
[431] Eric Schmitt, "Confrontation in the Gulf; Air Force Chief is Dismissed for Remarks on Gulf Plan; Cheney Cites Bad Judgment," *The New York Times*, 18 September 1990.

put forward in the 1930s that so rankled Army and Navy leadership.[432] While most media

sources attribute the firing to the inappropriateness of Dugan's speculation on classified war

plans (including the targeting of Saddam Hussein and his inner circle), the deleterious effects his

remarks had on joint military harmony and their implied rejection of combined arms inter-

dependence seemed to be a factor as well. Secretary Cheney himself remarked, "[s]tatements…to

the effect that the Army and the Marines would provide for diversionary activities while

basically the Air Force carried the ball were inappropriate."[433] Cheney's comment represented

the value the exogenous defense establishment places on mutual respect, perhaps reflecting the

views he had developed as a member of Congress prior to the passage of Goldwater-Nichols.[434]

ii. CAS Execution in Desert Storm
Irrespective of Dugan's notable display of air-power chauvinism, the Air Force's capabilities did

have a good showing in Desert Storm. The lesson offered about CAS is by negation rather than

observation, though. The combat air power employed in Desert Storm was primarily interdiction

and BAI, but not CAS.[435] The Air Force, by an agreement worked out with General Norman

Schwarzkopf, performed only 'emergency CAS' within five kilometers of Army troops, meaning

it was a rare practice.[436] Army helicopters assumed responsibility for CAS inside this range.

Reported CAS sorties constituted 32 percent of ground-attack sorties, but since most of these

occurred without visual coordination by a ground or forward air controller, they did not meet the

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[432] John M. Broder, "U.S. War Plan in Iraq: 'Decapitate' Leadership," *The Los Angeles Times*, 16 September 1990. http://articles.latimes.com/1990-09-16/news/mn-1221_1_iraqi-air-force/2.
[433] Schmitt, "Confrontation in the Gulf; Air Force Chief is Dismissed for Remarks on Gulf Plan; Cheney Cites Bad Judgment."
[434] Prior to his service as Secretary of Defense, Cheney represented Wyoming in the U.S. House of Representatives from 1979 to 1989. Dugan became the first of three Air Force service chiefs since 1990 who have left office earlier than expected after public disputes with civilian leadership.
[435] The description limits consideration to intra-theater operations; certainly military airlift was a dominant factor in the massive military buildup that preceded Desert Shield and Desert Storm.
[436] The definition of 'emergency CAS' varies with rules of engagement specific to each theater of battle, but in general it means *ad hoc* CAS performed without the benefit of specially trained ground observers who identify targets and give aircraft official clearance to drop ordnance. Planning only for emergency CAS implies that commanders did not expect to rely on CAS much at all.

doctrinal definition of CAS then in effect.[437] The inability and unwillingness to even attempt a

serious CAS effort revealed a major execution gap for a doctrine that purported an ability to

facilitate rapid maneuver of forces against a numerically superior enemy by relying heavily on a

well-oiled CAS delivery system. A "reaffirmation" of the importance of CAS was #24 of the 31

Initiatives, designed to address "the traditional distrust the two services felt toward one another

on the issue."[438] If the Army and Air Force did not have enough confidence to execute this type

of tactics against an inferior and smaller Iraqi force, though, one can imagine that it portended

unfavorable outcomes should its use have been required against the Warsaw Pact.

Besides the Army-Air Force coordination shortfalls, differences in the Air Force's

centralized command-and-control system *vis-à-vis* the Marine Corps' organic system came into

sharp relief again in Desert Storm. Marine message traffic referred to General Horner as merely

the "joint force air coordinator," snubbing his given title of Joint Forces Air Component

Commander (JFACC). Paralleling this passive-aggressive shirking of joint component authority,

the Marines' contribution to the overall air war through the Tactical Air Control System (TACS)

dwindled from fifty percent of their total capacity on the first day to "running an independent air

war" at the end of the conflict.[439] Horner did not publically respond to this antagonism. Instead,

the system of "push CAS" control he adopted for the air assets under his control reflected a

Marine Corps preference to allocate aircraft at regular intervals to areas where ground forces

anticipated enemy contact.[440] If available aircraft exceeded the needs of local ground

commanders, airborne command-and-control assets re-tasked the sorties after takeoff to strike

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[437] "Joint Publication 1-02: Department of Defense Dictionary for Military and Associated Terms," (Washington DC: Joint Chiefs of Staff, 1989), see "close air support" definition.
[438] Davis, *The 31 Initiatives*, 60.
[439] Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 185. The TACS is an Air Force command and control construct. The Marine Corps employs an organization called a MACCS for similar functions, but it coordinates only the air power organically assigned to support Marine operations.
[440] Account in Tom Clancy and Chuck Horner, *Every Man a Tiger* (New York: G.P. Putnam & Sons, 1999), 244.

interdiction targets. Very few CAS sorties flew in support of the ground forces to which they were first allocated; a rapid ground advance after a heavy bombardment of the enemy forces created little need for 'pure' CAS.[441] Unwillingness by the theater commander to force the Army and Air Force to coordinate in any meaningful detail with respect to the fire support coordination line (FSCL) eliminated chances that true CAS would occur. It also served as a reminder that as 'joint' as AirLand Battle may have been, it was by no means compelling across *all* of the services.

Desert Storm revealed that AirLand Battle left significant operational challenges in place despite its ability to facilitate Army-Air Force cooperation in the 1970s and 1980s. The heart of the issues that plagued air-ground integration in the first Gulf War were related to unresolved disputes about the FSCL, along with disagreement about command and control of weapons systems near the seams between the two services, which led to neglect and ossification of the command-and-control systems needed to effectively coordinate force application near inter-service boundaries. Ian Horwood observed that debates over placement of the FSCL, in light of long-range artillery and attack helicopters pursuing the deep attack methodologies of AirLand Battle, made the overlap between Army and Air Force areas of responsibility even larger. While giving commanders more insight over a wider area of terrain as intended, AirLand Battle also seemed to have given them more to fight over with their joint counterparts. With no commensurate agreement about how commanders would orchestrate these operations, the likelihood of friendly fire and other combined-arms failures was high.[442] In Desert Storm, deliberate operational decisions kept those risky areas from being tested. In effect, Schwarzkopf agreed to plans that eliminated potential Army-Air Force contentions about CAS by ensuring

[441] Peter A. Costello, III, "A Matter of Trust: Close Air Support Apportionment and Allocation for Operational Level Effects" (Master's thesis, Air Command and Staff College, 1997), 31.

[442] Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 185.

that the services would not have to work together in that arena. In doing so, he exposed doubts

about AirLand Battle's efficacy in a more intense war.

Summary of AirLand Battle Joint Accomplishments		
Area	*Tangible Improvements*	*Enabling (Inhibiting) Actions*
Organizational Jointness	- Bi-service helping behaviors over more than a decade - Doctrine & organizational concept w/ bi-service impact - Adopted as *de facto* DoD, U.S. national strategy for NATO - Joint budgetary cooperation (AF-Army Initiative #31) - ALFA/ALSA became enduring multi-service tactics organization - Elicited response (not adoption) by Navy and Marine Corps	- Credible Warsaw Pact threat; fear of failure of 'Active Defense' - Congressional demands for jointness; expanding early-1980s defense budget; Army, AF "moving on" post-Vietnam - DoD and Joint Staff required credible internal plan for Europe - Trust & habitual cooperation over time: geographic proximity of TRADOC & TAC; leaders who established and reinforced routine joint working relationships; well-publicized, senior leader-endorsed terms of reference & mutual agreements; top-down & collaborative approaches; empowered mid-level officers - Air Force's immutable doctrine; Navy's resistance to defense reform - NATO unease over 'offensive' strategies
Combined Arms & Warfighting Jointness	- Viable Cold War doctrine & war plan - Increased geographic and time 'depth' of operations - Battle-tested org. scheme for Gulf War - Revived "operational art" - "31 Initiatives" accomplishments: Air defenses (#1-5, 12); Rear area defenses (#6-11); SEAD[443] (#13-15); Special Operations (#16, 17); Munitions (#18, 19); Night operations (#20); Battlefield Air Interdiction (#21); Joint Target Assessment (#22); Threat Interdiction (#23); CAS/TACP/CAS aircraft (#24-26); JSTARS (#27); U2/TR-1 & Tac Recce (#28, 29); Intra-theater airlift (#30); Intelligence sharing (#32) - Joint ideals not reflected in combat	- Met needs of endogenous, meso-org., and exogenous defense orgs. - Creative/visionary senior leadership - Evidence from contemporary conflicts - Joint training at national training centers (incomplete preparation) - Army's doctrinal culture & interplay with academic community - Trust & interdependence: AF airspace expertise; Army ground defense expertise; allocation/apportionment compromise - Lack of confidence in Desert Storm - Compromise / incomplete OT&E - Technology - Complexity, perceived difficulty - Hubris, insecurity

Table 3.2 Observed Joint Accomplishments of AirLand Battle

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[443] Suppression of Enemy Air Defenses (SEAD) refers to measures taken to weaken, neutralize, or destroy enemy air and surface threats before they can impede friendly freedom of action in the air domain. This broad definition comes from "Marine Corps Warfighting Publication 3-22.2, Suppression of Enemy Air Defenses," (Washington DC: Headquarters U.S. Marine Corps, 2001), 1-3. The joint definition of SEAD does not mention air threats and limits consideration to "enemy *surface based* air defenses by destructive and/or disruptive means;" see "Joint Publication 3-01.4: Joint Tactics, Techniques, and Procedures for Joint Suppression of Enemy Air Defenses," (Washington DC: Joint Chiefs of Staff, 1995), v, emphasis added. The more restrictive joint definition reflects service disagreement about the JFACC's role in conduction SEAD on behalf of the JFC, part of a recurring dispute about Naval and MAGTF air asset control by an Air Force JFACC.

III. Theoretical Explanations of Jointness

This section hearkens back to the questions raised in Chapter 2 by individual areas of theory that might apply to jointness. This section begins to tie the historical process-tracing narrative back to the foundational theories, offering a brief summary of ideas that are more fully developed in Chapter 6. The overall structure of the section follows the pattern established in Chapter 2, beginning with general organizational theory and proceeding to military-specific theory. When applicable, it identifies mechanisms as corresponding to the three identifiable levels of hierarchy in the defense establishment in which the services exist. Table 3.3 (page 169) lists a summary of relevant observations.

A. General Theories of Organizational Interaction
1. Public Goods: Do the services act as free riders in the production of national security? Do military organizations need to be goaded through public pressure to reach jointness or will they seek it with sufficient appeal to purpose? Which better encourages jointness, social pressure or an appeal to purpose?

Neither free riding nor a particular need for small-group pressure in coercing one branch of the military to contribute to solving a national security problem seems operative here. Responding to a first-order threat of Soviet conventional power in Central Europe, a concept of operations for meeting that perceived danger arose. If the Army as an entire organization did the earliest, most thorough job of defining that problem, it was probably because it had no significant other role—such as the Air Force's concentration on maintaining a sizable arsenal of strategic nuclear weapons on alert or the Navy's consistent pursuit of full-time power projection—to distract from moving on to a new definition of its role in a post-containment, post-Vietnam security environment. The Army's effort to define its force structure in terms of the Warsaw Pact did not meet with charges of guile, though. To the contrary, the Army followed the lead of the exogenous defense establishment and the community of Western security analysts. The Air Force, particularly TAC, was happy to follow the Army's lead and accept a role that appealed to

its desire to be of central importance in the strategy for victory of NATO against Moscow and its satellites.

2. Organizations: How do threats, bureaucratic politics, and political maneuvering influence jointness? How do service subgroup interests advance or inhibit joint cooperation? Do overlapping capabilities advance or threaten jointness?
The three distinct types of organizational behavior are all in view with respect to AirLand Battle.

The first-order threat of the Soviet Union played a substantial role in the AirLand Battle dynamic.

Also notable were the abilities of senior military leaders to triumph against bureaucratic inertia

by advancing bold visions based on those threats. While theories of bureaucratic politics

generally describe any resistance to outside influence and are more appropriate for describing

resistance to an external policy change like Goldwater-Nichols, the service behaviors of the Air

Force and Army also reflect the politics of subgroup coalescence. As Donnithorne noted,

baseline organizational theory did not provide satisfactory explanatory power with respect to

Goldwater-Nichols, as it would predict unified endogenous opposition to the law, when in the

event the actual responses among the services were nuanced.[444] Later analysis touches on the

congressional influence on AirLand Battle.

3. Crisis Cooperation: Do military services make decisions about jointness in a context of crisis? How does the perceived urgency of a dilemma affect decision and cooperation mechanisms?
The Cold War, though it unfolded over decades, meets all facets of the definition of 'crisis' put

forward by the academic discipline that studies crisis cooperation. The unpredictable behavior of

leaders of the Soviet Union, along with its undisputed—and often overstated or overestimated

military might—made the Warsaw Pact and the specter of European aggression seem a very real

existential threat to all of the NATO nations. As mentioned, defense leaders exploited this aspect

of the crisis to advance their ideas about AirLand Battle and related ideas. At the same time,

there was a certain comfort that arose from the constancy of having the Soviet Union as the sole

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[444] Donnithorne, "Principled Agents," 331.

opposing superpower. Aside from the scare of a nuclear exchange that arose sporadically through

the period, the staring contest made for stability, however tense it might have been. As a long-

term crisis with conditions that did not change rapidly and came to be well understood, the

conditions under which AirLand Battle was spawned constituted a promising environment for

inter-organizational cooperation. Empirical research has demonstrated that organizations are

more likely to adopt crisis-coping strategies that signal trustworthiness to other organizations

when there is less uncertainty about the definition of and preferred response to a given crisis.[445]

*4. Professions: Do overlapping service capabilities advance or hinder jointness? Do subclasses
vying for recognition in their respective military services offer a mechanism for joint
cooperation?*
Per Abbott's discussion of professional competition, the need to compete is strongest when there

is uncertainty about what different groups do, where their competence lies, and what distinct

contribution they would make. AirLand Battle diminished the need to engage in this type of

competitive behavior, because the warfare it envisioned assigned distinct roles to both the Air

Force and the Army. The 'deep battlefield,' with NATO forces arrayed against a numerically

superior and aggressive enemy, offered both services plenty of opportunity to engage the

unconstrained, all-out warfare for which both yearned in the wake of Vietnam. David Johnson

remarked that AirLand Battle made Central Europe "a place where the Air Force could do,

doctrinally, absolutely what it wanted, as could the Army."[446] The Army knew it would require

deep air strikes to disable the follow-on forces that the Warsaw Pact could generate. But it did

not fear for its relevance to the overall battle, because the clash of armor and infantry at the front

would be significant as well. With disputes over air mobility and CAS solved—at least on

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[445] Svedin's study of crisis cooperation found a negative correlation between uncertainty in defining the response to a crisis situation and an inter-organizational crisis strategy of signaling trustworthiness; see Svedin, *Organizational Cooperation in Crises*, 120.
[446] Johnson interview, 24 February 2014. Reflecting the win-win perceptions both services had of AirLand Battle, he went on to add, "But there's an intersection where BAI is, and suppression, and using ATACMS and other thing to go deeper, that makes everything easier for everybody. It wasn't a competition."

paper—neither service felt a need to defend its position in the defense pantheon. If AirLand

Battle inspired insecurity, it may have been on the part of the Navy and Marine Corps, which had

to scramble to reposition their contributions in the context that AirLand Battle provided, and

offers a partial explanation for their participation in the 31 Initiatives it spawned.[447]

TAC, as a rising subgroup within the Air Force that was taking over the 'monarchic'

leadership role previously held by SAC and the strategic bomber community, was looking for

another interest group in the defense establishment with which it could combine resources. It

found it in TRADOC and the larger Army, whose attention was primarily focused on the type of

war to which TAC could make the most significant contribution. In AirLand Battle, the Air

Force and the Army were making an argument to their political masters in the exogenous defense

establishment about the quality of their expert labor. They were, borrowing Andrew Abbott's

formulation of professional dialogue, arguing that their recognition of and answer for the

challenge of defeating the Soviet threat merited validation in the form of extra resources.[448]

5. Agency: Does the large number of principal-agent relationships evident in the defense
establishment advance or threaten jointness?
This investigation did not reveal apparent implementation slack, shirking of principal-assigned

duties, or other maladies suggested by agency theory that were relevant to the development of

AirLand Battle. To be sure, there are agency dynamics at play any time the Department of

Defense is going through organizational changes. Donnithorne exposed the extent of those in

applying agency theory to his model of service response to the Goldwater-Nichols Act, which

was contemporary to AirLand Battle.[449] However, since AirLand Battle was an endogenous

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[447] "The problem was bigger than either one of them [the Army and the Air Force] could solve. It also served to increase budget share for AirLand Battle over what was going on in the Navy and the Marine Corps. The Navy's mission [was] essentially to hold open the sea lanes to the ReForGer [Return of Forces to Germany—the reinforcement logistics plan for NATO] [could] get there;" ibid.
[448] Abbott, *The System of Professions*, 20, 69-77.
[449] See, in particular, his account of the Navy's focused and coordinated campaign to resist any and all congressional reform efforts; Donnithorne, "Principled Agents," 323-26. Inasmuch as this constituted pre-policy lobbying, it is a

effort to innovate and solve a pressing security problem, it does not exhibit the same top-down policy implementation characteristics that make agency considerations relevant. Though the meso-organizational and exogenous defense hierarchies came to adopt the cognitive framework AirLand Battle provided and even used them for their own purposes, the initiative itself remained a development of the services and was executed according to the vision and leadership of its participants, not Congress or some other exogenous body.

B. Military-Specific Theories and Discussion
1. Military Innovation: Do the sources of military innovation advance or hinder jointness? Do crisis conditions advance or hinder jointness?
On its face, AirLand Battle offers a case of endogenous military innovation. To the degree that the doctrine was a hybrid of peacetime (with no shooting war taking place), wartime (yet with the specter of the Cold War and uncertainty about Soviet plans looming), and technological (the sensors to enable vision across the 'deep battlefield' demanding advanced technology), it exhibits elements of each of the traits outlined by Stephen Rosen in his baseline theory. Namely, the Army and the Air Force evaluated "the future character of war" (peacetime); they developed "new measures of strategic effectiveness, effective intelligence collection, and an organization able to implement the innovation within the relatively short time of the war's duration" (wartime); and they developed "strategies for managing uncertainty" (technological).[450] The official Air Force history of the 31 Initiatives frames that part of AirLand Battle explicitly as a case of endogenous military innovation and leading organizational change.[451] The plausible subtext of wartime innovation arose from the sense of urgency spawned by the unfavorable conventional force ratios NATO perceived itself facing in Central Europe.

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nuanced application of agency theory. Though the Navy opposed changes, it did through so channels of legal discourse, and did not challenge Congress' authority to reform defense organizations *per se*, which would have had serious implications for civil-military relations. In the event, Goldwater-Nichols passed over the objections of the Navy.
[450] Rosen, *Winning the Next War*, 52.
[451] Davis, *The 31 Initiatives*, 1.

Relevant to the success of the innovation represented by AirLand Battle is the leadership atmosphere under which it occurred. 'Involved senior leadership' best describes the approach the Army took toward developing the doctrine and gaining a sister service's participation and support. Though AirLand Battle was largely the intellectual output of an effort overseen by General Starry, General DePuy's early effort to reinvent the Army's main battle doctrine had created the right intellectual environment to allow big changes, and his earnest pursuit of relations with TAC created a long-term, trusting relationship that was able to persevere over several leadership changes. Finally, the empowerment of small groups of mid-level officers represented by the JFDG epitomized in microcosm Rosen's recognition that senior leaders need to provide top cover for innovative ideas.[452] Though the implementation group did not attain a specialized promotion system *per se*, the demonstration that their ideas would hold real weight in the development of inter-service operational concepts overcame initial skepticism on the part of its members and provided an equivalent mechanism.[453]

2. Civil-Military Relations: Which leads to better joint cooperation, civilian control of the military via objective means or control via subjective means?

In advancing AirLand Battle, the Army and the Air Force strove to show trust in one another, to demonstrate an ability cooperate on combined arms efforts, and to prove to an exogenous audience that they merited objective responsibility for national defense. Ironically, in responding to the concerns of security analysts outside the military who perceived the Warsaw Pact countries as the next big security issue, the overall effort reflected some degree of *subjective* control, with the military reading and responding to external security preferences. However, the chilling nature of this perception to those of a more Huntingtonian persuasion diminishes with the realization that military intelligence estimates in large part informed the civilian opinion, and

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[452] Rosen, *Winning the Next War*, 251.
[453] See Davis, *The 31 Initiatives*, 42.

a significant military mismatch did not exist elsewhere in the world. In short, the same conclusion would have accrued whether pursued by objective or subjective control.

Where the effectiveness of subjective control does seem to make an important contribution is the subtext of congressional pressure for defense reform that backstopped the early 1980s. If AirLand Battle was a good idea because it made the services fight together with greater efficiency against a potent enemy, it was an even better idea in the political context of the day. To use this type of subjective control to bring about jointness can have a dual nature, however, as exhibited by the Navy and Marine Corps responses during Goldwater-Nichols deliberations. Where two services saw a means to position themselves for better negotiating positions by exhibiting cooperation and jointness, the remaining two adopted a position of defiance and *status quo*, hence remaining largely separated from AirLand Battle development.

3. Service Cultures: How do services' dominant cultures advance or hinder joint cooperation?
Even though Jeffrey Donnithorne predicted and found support inside the Army for Goldwater-Nichols reforms based on the service's culture of selfless compliance, he also showed that the service attempted to improve the quality of proposed reform legislation by influencing the details. A cooperative institution, demonstrating its competence against the nation's preeminent threat through an effective AirLand Battle doctrine, was a predictable image for the Army to adopt. It fit its own perception of its values while providing a means under which it could lobby DoD and Congress without violating its institutional ethic. By contrast, the Navy viscerally opposed the Goldwater-Nichols changes, with its most severe reactions reserved for policy changes that created a single military advisor to the President, thus limiting the direct access of the Navy.[454] As its testimony before Congress demonstrated, the Navy and Marines adopted defiant

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[454] Donnithorne, "Principled Agents," 317-18.

opposition to the measure, which explains in part why they made only token gestures of additional jointness during the era prior to the act's passage in 1986.[455]

The most culturally illuminating aspect of this case study was the distinct views of doctrine the services took. As a unifying concept, AirLand Battle had to be presented to the Air Force as something other than doctrine for it to take hold. The Army rather readily adopts new and novel doctrinal concepts that fit its current problem set, but the Air Force, wed as it is to immovable and oft-unspoken doctrinal principles, requires less rigid operational concepts that will not pose a challenge to these ideals if it is to become a meaningful partner in a joint initiative.

4. Defense Department and Joint Staff Structures: Does the structure of the Joint Chiefs of Staff, the Joint Staff, and specified and unified combatant commanders further or hinder joint cooperation? Do the powers of the Secretary of Defense further or hinder joint cooperation? Inside the Department of Defense in the early 1980s, any effort that made reorganization seem less necessary was likely to garner at least tacit support. Though he was "largely silent on the subject," Secretary of Defense Caspar Weinberger believed that defense reform and reorganization were unsuitable substitutes to defense budget increases, noting that "you can't buy airplanes and bullets and rifles and submarines and things like that with reorganization plans."[456] He neither advanced nor thwarted AirLand Battle. In contrast, meso-organizational structures, including the Joint Chiefs and combatant commanders, adopted the verbiage and bureaucratic procedures of AirLand Battle, finding they helped to advance desired programs. While this probably gave the endogenous innovation of the services more credibility within the

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[455] See, *inter alia, Reorganization Proposals for the Joint Chiefs of Staff*, Admiral Hayward's testimony, pp. 99, 101, 01, 246, 52-53; Deborah Kyle and Benjamin Schemmer, "Navy, Marines Adamantly Oppose JCS Reforms Most Others Tell Congress Are Long Overdue," *Armed Forces Journal International* 119, no. 10 (1982): 61-67. Donnithorne also documented a plethora of archival evidence showing opposition to reforms and a shadow campaign against it by civilian Navy leadership, notably Secretary Lehman; see Donnithorne, "Principled Agents," 323-26.

[456] For a characterization of Weinberger's response to early defense reform discussions, see "Principled Agents," 329. The quote about acquisitions is from Caspar W. Weinberger (Fifteenth Secretary of Defense, 1981-1987), interview with James R. Locher (Box 63, Locher papers), 27 October 1998. It is quoted in Donnithorne, "Principled Agents," 313.

larger defense establishment, the structure itself neither helped nor harmed the initiatives. The more significant observation is that meso-organizational and exogenous defense structures can serve as building blocks in coalitions that give joint initiatives momentum, credibility, and strength.
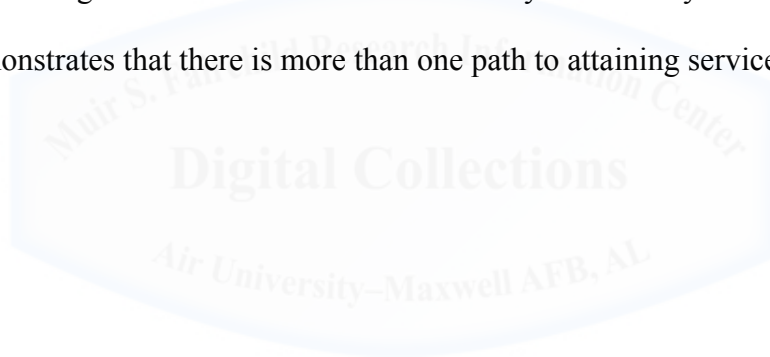
5. Other Exogenous Factors: Do defense acquisition processes advance or hinder joint cooperation? Do exogenous organizations' perceptions and stereotypes of the services advance or hinder joint cooperation?
AirLand Battle came about during a unique period of congressional involvement in questions of defense organization. These seem to rise only every few decades in American politics, so the context for AirLand Battle is exceptional. It is, however, something for which a practitioner seeking to advance a joint cause should account. The dynamics of defense reform, when present, will certainly provide a context for any effort, and will be available for exploitation by both those who would favor and those who would oppose service 'sovereignty' vis-à-vis additional movement toward cooperation.

The aspect of American defense politics that remains relatively constant is a high degree of congressional interest and involvement in any military procurement decision. AirLand Battle and its attendant agreements led to new weapons systems. As it turned out, the permissive defense budget allowed DoD to buy several major new systems during the 1980s, and some of the notable ones, including the A-10 replacement and JSTARS, were directly attributable to AirLand Battle. That the procurement requirements arrived pre-stamped with bi-service support from within the defense establishment gave members of Congress seeking to advance them additional political credibility. As an added bonus, they provided an answer to the pressing question of a perceived Soviet menace. Thus AirLand Battle, to the degree it focused on acquisitions, was an effective mechanism for bringing into quick coalescence interests lying in the endogenous services, the meso-organizational joint staff and commanders, and the exogenous executive and

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legislative components of the defense establishment. The mechanism, effective though it was, did not exhibit unbridled power; the failure of the Air Force to procure an A-10 replacement continues at present.

Given the endogenous structure of the services and the fact that the defense meso-organization culls its leaders from those services, a dynamic of interaction among service and congressional interests will endure. The services need not become lickspittles over congressional wishes, as they will usually retain the most credibility when it comes to stating equipment requirements, but AirLand Battle and the 31 Initiatives showed that engaging, entertaining, and showing progress on legislative concerns seems to generally have more positive outcomes than does a strategy of outright defiance. The relative constancy of the Navy's budget and clout in Washington demonstrates that there is more than one path to attaining service interests, though.

AirLand Battle Observations	
Theory	*Observed Outcomes for Jointness*
Public goods	- No deliberate free riding by any service; an appeal to purpose sufficed to create cooperation and a sense of trust - Perceived clear threat and strategy led all services to adopt ALB's operational concept - Operational jointness pursued in good faith for duration of threat
Organizations	- Threat response drove collaboration and systems development; overcame bureaucratic politics - Social psychology enabled by senior military leaders overcame common bureaucratic barriers to trust - TAC grew influence within the AF; coalescing interests with Army and exogenous defense establishment provided credible deterrent - TAC/TRADOC/Pentagon proximity facilitated extensive cooperation
Crisis cooperation	- Enduring perception of urgency from Warsaw Pact conventional military threat provided impetus for cooperation - "Unclear/long-term" crisis provided trusting, cooperative atmosphere; many helping behaviors observed
Professions	- Operations envisioned for ALB minimized conflicting interests in AF and Army - Interdependence in operational concept encouraged cooperation, but size of perceived threat did not create overlapping capabilities - TAC's standing enhanced within AF and in larger DoD by its role in ALB
Agency	- Little evidence of implementation slack for ALB - Good-faith response to threat established implicitly and explicitly by exogenous defense establishment and other security analysts - Primary sources for this investigation are unlikely to uncover evidence relevant to agency theory
Military Innovation	- Military establishment demonstrated endogenous innovation in creating tactics & technology to enable the ALB operational concept - Top-down & consensus-building methods both used in the development of ALB - Cold War was a hybrid of wartime & peacetime conditions - Lack of true test for C2 and conceptual integration prevented complete realization of some of the doctrine's most critical components
Civil-Military relations	- Congressional dissatisfaction with military's ability to conduct joint operations served as a subtext for ALB - Ongoing defense reform caucus a possible motivation for services to exhibit enthusiasm for jointly cooperative endeavors like ALB - To the degree ALB is a demonstration to Congress, it reflects a traditional desire for objective civilian control, but the process was subjective in nature
Service cultures	- ALB provided opportunities for both services to operate within their preferred strategic culture - ALB offered a vision of an 'unconstrained' battlefield that cleared service palates after Vietnam, though a shooting war did not test the reality of that perception
Defense Department & Joint Staff structures	- ALB served the interests and met the needs of the meso-organizational and lower exogenous defense establishment - Joint Staff and DoD adopted the language & premises of ALB; influence as unifying concept spread throughout defense establishment - DoD adopted and amplified Army's call for more CAS aircraft and capability
Other Exogenous Factors	- Congressional interest in defense reform played a unique role in giving ALB multi-level appeal - Congressional influence on cooperation is evident on CAS dispute and for doctrinal clarity

Table 3.3 Theoretical Observations on AirLand Battle Joint Cooperation

IV. Conclusion: A Mixed Result of Cooperation

The context of the AirLand Battle cooperative effort has its roots in the moribund post-Vietnam military. The path to cooperation between the services seemed anything but inevitable. Army-Air Force relations had frayed alongside the morale of individual services as the Vietnam conflict wore on. After the final removal of U.S. troops, the Army faced a daunting task of rebuilding itself from a wartime nadir.[457] If the vision that inspired AirLand Battle was first dressed in the green fatigue uniforms and black leather boots suitable for combat in the deciduous forests of Central Europe, the concept saw its only real combat action wearing the light brown fatigues and beige suede boots chosen for the deserts of the Middle East. The force assembled in 1991 to eject the invading Iraqi Army from Kuwait is the only substantive military test of AirLand Battle's efficacy. Since spoils and the right to slant history go to the victorious nation—and its military services, legislatures, and defense contractors—it is not surprising that AirLand Battle appears in many descriptions as a key to U.S. success.

A more objective view is that the Iraqi army was a threat of less significance than first perceived and that so many incomplete tests of ballyhooed doctrinal concepts occurred in a short time that none could have been definitive. In a manner typical of most efforts to extract objective truth from historical narrative, the prize lay somewhere in a swampy middle ground. Whether or not the fighting doctrine *itself* ensured victory, the operational concepts outlined in AirLand Battle led to substantial segments of the force structure and military capability with which the U.S. fought Operation Desert Storm. The era AirLand Battle defined ended with some sharp diversions in ideology of the two services involved after the Gulf War of 1991, but even the apparent fatigue the sister services showed in pursuing joint cooperation serves as evidence that a

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[457] For a summary of the Army's internal challenges after Vietnam, see Nielsen, *An Army Transformed: The U.S. Army's Post-Vietnam Recovery and the Dynamics of Change in Military Organizations*, 1,41-42.

genuine effort had existed. In the final assessment, AirLand Battle appears to have been the impetus that corralled other existing forces, driving meaningful bi-service cooperation in a genuine search for a means to counter a military threat that required a response by the U.S. military establishment.

V. Epilogue: Repudiation by the Air Force, Abandonment by the Army

The harmony of AirLand Battle was never perfect. Even at the apparent peak of its success, an insider's account related, "One Air Force official is quoted as saying 'when we say we agree with the AirLand Battle concept...we agree that the concept is a good concept for the Army.'"[458] Cracks in the perceived urgency of a first-order threat to national security posed by the Soviet Union came into view in the mid-1980s, just as Goldwater-Nichols was taking effect. In the era of *glasnost* and *perestroika*, Congressional testimony and academic analyses of the Warsaw Pact began to hold the conventional might of the eastern bloc in less awe than had driven defense budgets earlier in the decade.[459] In addition to raising questions about the assumed capabilities of NATO's chief rival, authors began to note the trepidation that war plans based on AirLand Battle doctrine had raised in Moscow.[460] While the turning of these tides of perception served to validate AirLand Battle's effectiveness as part of an overall U.S. foreign policy response that brought to an end the Cold War, the end of the threat also meant that the doctrine demanded diminished adherence by the services. In the early 1990s, there was a sense in the West that the

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[458] Michael R. Gordon, "The Army's Air-Land Battle Doctrine Worries Allies, Upsets the Air Force," *National Journal* 15, no. 25 (1983): 4F.

[459] An example of Congress adopting an academic's assessment of diminished Soviet power is evident in E. William Proxmire, (100th Congress, 1st session) "No, the Soviet Military is Not Ten Feet Tall," *Congressional Record* 133, no. 206 (1987). Senator Proxmire entered an article by defense analyst Peter Almquist into the record that reflected a diminished view of Warsaw Pact forces vis-à-vis NATO's capabilities.

[460] See, e.g., Almquist's description of unease Soviet writers expressed with regard to both AirLand Battle and Follow On Forces Attack, which they perceived as a "NATO offensive strategy;" Peter Almquist, "Moscow's Conventional Wisdom: Soviet Views of the European Balance," *Arms Control Today* 17, no. 10 (1987): 17.

once great Russian military industrial network was defunct.[461] Congress was focused on making

sure the same thing did not happen in the U.S.[462] No longer facing the Red menace, the military

services struggled to redefine their respective niches in a world without the chilling surety of a

framework provided by a conventional Central European battle scenario. They also had to find

justification to pursue shares of a shrinking defense budget with an urgency that had not existed

during the Cold War. The services quickly took their battles into the public arena, with the Air

Force's 'Global Reach—Global Power' facing off against the Army's 'Strategic Force—

Strategic Vision.'

 Whether the Air Force would have ever completely embraced the role the Army envisioned

for it in formulating its Cold War era doctrine is doubtful—the Air Force's doctrinal rudder

seems locked. The loss of the Soviet threat made movement away from AirLand Battle in the

late 1980s a certainty, though. This research noted that a caveat penned by Air Force writers

appears repeatedly: AirLand Battle never reached the status of "official" service doctrine.[463]

Futrell's history, which is staid and balanced throughout, lets go with a moment of atypical

unrestraint in its discussion of AirLand Battle, quoting a narrow sampling of critical voices,

including anonymous detractors. Retired Lieutenant General David Deptula drove this point

home in a personal interview, as though seeking to cauterize the wound to Air Force dignity

exposed by these earlier histories.[464] A quotation taken from a memorandum written by then-

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[461] See, e.g., Steven Erlanger, "Russia's Workers Pay Price As Military Industries Fade," *The New York Times*, 3 December 1993, A1.
[462] Systems like the A-10, JSTARS, and *Apache* helicopter received advocacy for their roles in the Gulf War rather than their mooted role in European conflict; see DeConcini, "Senator DeConcini, Statement on Apache Helicopter," S9956.
[463] For example, Cardwell wrote, "It should be noted that AirLand Battle doctrine is U.S. Army doctrine and has not been formally accepted by the U.S. Air Force as Air Force doctrine;" Cardwell, *Airland Combat*, 34. Futrell protested that "[t]he name AirLand Battle implied that there was cooperation and agreement between the Army and the Air Force, but in fact the doctrine was a unilateral development of the Army;" Futrell, *Ideas, Concepts, Doctrine Vol. 2*, II, 1961-1984, 551.
[464] Deptula interview, 5 December 2013.

Lieutenant Colonel Deptula is the second epigraph to open this chapter, and distills to the same point, though adding an implication that, in cooperating with TAC as if it spoke for its parent service, the Army had nearly deceived the large Air Force into accepting the concept as its organizing doctrine.[465] It seems more likely that the Soviet threat and TAC's need for an alliance in the defense establishment made it a consenting partner, but nevertheless both of these conditions changed over time.

In 1993, the Army's new version of FM 100-5, in seeming acknowledgment to congressional prodding that both the Cold War as well as an era of inter-service doctrinal cooperation were complete, mentioned AirLand Battle five times, but allowed that its new doctrine "causes AirLand Battle to evolve into a variety of choices for a battlefield framework and a wider inter-service arena, allows for the increasing incidence of combined operations, [and] recognizes that Army forces operate across the range of military operations."[466]

Practical means of bureaucratic cooperation ended along with the shift away from AirLand Battle, including the remarkable fiscal coordination put in place by Initiative #31. Now "very little" coordination on budget matters occurs between the Air Force and the Army at the action-officer level, according to a member of the Air Force's budgeting organization in the Pentagon.[467] High-level coordination does occur when there is an OSD policy decision that the services collectively find odious; senior flag officers get together to put together a unified front of opposition. The services are collectively nervous, however, about proactive cooperation to advance programs of mutual interest of the type demonstrated during the AirLand Battle years,

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[465] Deptula's memo points out the mismatch between TAC, one of the Air Force's major commands with a focus on tactical air power applications, with TRADOC, which was charged with developing concepts and training that had Army-wide impact; 1-2.

[466] "Field Manual 100-5: Operations," (Washington DC: Headquarters, U.S. Army, 1993), ii.

[467] Anthony D. Babcock (Lieutenant Colonel, USAF; Strategic Plans and Programs Division (A8PE), Headquarters Air Force), personal interview with the author, 21 March 2014.

and do not have a standing working group of mid-level officers of the kind that distinguished the 31 Initiatives. Many who have working knowledge of the matter attribute the lack of cooperation mostly to financial constraint. The spoliation of the defense budget brings a quick end to cooperation: "Right now, especially during these last two years, with sequestration and budget cuts, it's more of a 'food fight' than it has been in a really long time."[468] The difference in the atmosphere with respect to this facet of the AirLand Battle era serves to underline a remarkable effect it had.

The reasons for AirLand Battle's decline as an organizing principle for Army-Air Force operations are, like the forces that came together to foster its growth, a function of many different factors. Most apparently, the first-order threat of Soviet invasion seemed to diminish with the end of the Cold War. The formerly imposing force of the Warsaw Pact seemed laughable in the face of an empire that could no longer keep itself intact. NATO and U.S. defense spending in Europe diminished quickly, as it did overall. With cuts on the way, all services began to defend their existing size, capabilities, and necessity in national defense. Focus moved away from Central Europe, and with it the emphasis on a doctrine developed almost exclusively for that area began to fade as well.

This does not explain the totality of the shift, however. The shrinking defense budget also seems to have atomized some previously collaborative interests, compounding the smothering effects on joint cooperation. As budgets extracted the peace dividend payable upon the end of the Cold War, the services found themselves in fights to dull the sting of cuts by proving their relevance to national defense. The Army wrote an official history of Desert Storm that made

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[468] Ibid. Lieutenant Colonel Babcock was quick to note that the process remains civil and aboveboard in spite of the competition for resources. He highlighted the fact that services are "not sniping" at each other, and "don't mark up" each other's budget submissions, budgeting slang for suggesting to decision-makers how one's own programs could be retained by cutting those of a rival. Accommodation is evident: "There is a very real sense that we need to position ourselves with respect to what we anticipate the Army and Navy will do."

scant mention of air power. The Air Force picked up a particularly strident line of rhetoric that argued air power had essentially prevailed on its own, and if the ground offensive was not a superfluous display, that it was merely the parade of the 'supporting' force. The absence of jointness was particularly stark in the wake of so much apparent and deliberate cooperation that had marked the preceding two decades. By negation, this also suggests that the growing defense budgets of the Reagan administration may have functioned as lubricant that made the act of pursuing jointness a bit easier than it is in more constrained times.

Another significant explanation for AirLand Battle's diminished ability to continue the pursuit of jointness was that Congress' appetite for organizational change had been sated, at least for a while. The passage of Goldwater-Nichols put to rest the reform caucus by passing major legislation. The Gulf War, even if it did result in increased inter-service fighting, was a widely hailed victory. The fact that the two very public faces of the military effort—Central Command's General Norman Schwarzkopf and Chairman of the Joint Chiefs General Colin Powell—held positions that the legislation had strengthened lent credence to the idea that the reorganization of the defense establishment had helped it emerge from the debacles of Vietnam, Grenada, Desert One, and Beirut. Popular perception held that after successful emergency surgery by Congress, the U.S. military was again well equipped to handle national security contingencies. If AirLand Battle's final examination is the perception of the military's performance in the eyes of military hagiographers and congressional staffers eager to prove their contributions to national defense, the entire effort must be graded a success.

This is not the only reasonable basis for adjudication, though. If the test of AirLand Battle was indeed Operation Desert Storm, an objective assessment of that campaign yields mixed results about the effectiveness in combat of procedures set forth on paper. The lack of confidence

in CAS procedures is an indictment, though the widespread practice and effectiveness of BAI, a mission set identified and prepared for in the name of AirLand Battle despite the Air Force's demonstrated cultural resistance, is a bright spot. The fact that weapons systems initiated in the name of AirLand Battle went on to become key components of joint warfare over the next twenty years demonstrated that the doctrine did have some of the flexibility it claimed, despite its apparent narrow focus on Europe. Far from questioning any doctrine, military methods, command-and-control structures, or the suitability of joint military leadership, most historical analyses of the conflict stress two things: the dominance of U.S. forces and the outstanding military equipment with which the campaign was waged. If AirLand Battle reintroduced the concepts of operational art and the operational level of war to U.S. military planning, critics such as Luttwak argued that the test was not severe enough to require, or indeed test, this type of thinking, which leaves it an open issue.

Yet Desert Storm need not serve any role in our assessment of AirLand Battle. If, finally, it is judged against a standard that calls for ongoing, meaningful inter-service communication and cooperation, AirLand Battle was an initiative that succeeded in leveraging the circumstances of a particular era—including an existential threat, congressional pressure, growing defense budgets, more lethal weapons systems, and burgeoning information technologies—to promote significant joint cooperation for a while. AirLand Battle remained effective in this context until a host of changing circumstances rendered it irrelevant. This investigation proceeds to additional case studies of jointness to see if that eventuality that has plagued other examples of military cooperation.

CHAPTER FOUR

COOPERATION IN PEACETIME:
THE JOINT PRIMARY AVIATION TRAINING SYSTEM, 1988-PRESENT

Sir, my altitude is 7,258 feet above sea level—far, far above that of West Point or Annapolis.[469]

U.S. Air Force Academy cadet's "Altimeter Check"
From *Contrails*, the Air Force Academy Cadet Handbook

I am encouraged by the cooperation and progress we have made in bringing jointness to flight training and hope that it serves as a model in other areas where the Department might benefit from increasing 'jointness.'[470]

John M. Deutch, Deputy Secretary of Defense
24 October 1994

We like the airplane…but flight training at Pensacola is not joint at all…the Navy and the Air Force run two completely separate enterprises.[471]

Captain James Vandiver; Commander, Naval Aviation Schools Command
April 2014

I. Introduction and Background
A. Prelude to Joint Aviation Training: The T-46 Debacle

At about the same time as interest in AirLand Battle was peaking, a forlorn Air Force acquisition

program hobbled toward the gallows, unceremoniously shoved there by a Congress and Air

Force that had grown to loathe it. Though the New York congressional delegation fought to

preserve aircraft production jobs at the Fairchild Republic factory in downstate Farmingdale, an

angry mob of political enemies united as one to kill the T-46 *Eaglet*, an aircraft they described as

an overweight, over-budget "turkey."[472] After winning a competition to become the Air Force's

replacement for its 1950s-vintage T-37 basic flight training aircraft in 1981, the T-46's

developmental cost overruns were forcing it out of the service's plans for training new pilots and,

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[469] *Contrails: The Air Force Academy Cadet Handbook*, vol. 38, (Colorado Springs: U.S. Air Force Academy Press, 1992), 138.

[470] "Consolidation of Fixed-Wing Flight Training" (signed memorandum); Deputy Secretary of Defense official correspondence; Personal collection of Raymond "Doc" O'Keefe, Universal City, TX, 1.

[471] James Vandiver (Captain, USN; Commander, Naval Aviation Schools Command (NAVAVSCOLSCOM), Pensacola Naval Air Station), personal interview with the author, 11 April 2014.

[472] This characterization of Rep. Samuel Stratton's fight to save Fairchild Republic's production of the T-46, along with Secretary of the Air Force Edward Aldridge, Jr.'s description of the airplane as a "turkey," (attributed to him by Representative William Dickinson) are from the debate record over the "National Defense Authorization Act for Fiscal Year 1987," (99th Congress, 2nd session) *Congressional Record* 132, no. 110 (1986).

ultimately, Fairchild Republic out of the aircraft industry.[473] The Air Force's September 1985

request to remove all funds for T-46 procurement reflected a deep-seated displeasure over both

the program's growing expenses and the sense of entitlement displayed by the corporate

leadership of Fairchild Republic's parent company.[474] Situated in a political environment that

was growing increasingly sensitive to defense excesses, these factors combined to sound the

"death knell" for a long-planned replacement trainer, for which final cancellation came in

1987.[475]

Fourteen years after the congressional hearing that confirmed the condemnation of the

T-46, a different aircraft, the T-6 *Texan II,* began to replace the T-37B *Tweet* and T-34C *Turbo*

Mentor on the primary flight training ramps of both the Air Force and the Navy.[476] The Joint

Primary Aviation Training System (JPATS) aircraft, as the T-6 is also known, first appeared at

Randolph Air Force Base in 2000 for instructor familiarization, arrived at Moody Air Force Base

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[473] Support for the program began a rapid decline after reports surfaced that the first airplane rolled out for display on 11 February 1985 had "several parts that were actually made of wood…" and cardboard; this was the "straw that broke the camel's back; Walter Kross (General (ret.), USAF; former Commander (1996-1998), U.S. Transportation Command and Air Mobility Command; former Deputy Chief of Staff, Plans and Requirements (1988-1990), Headquarters Air Training Command, Randolph Air Force Base, Texas), telephonic interview with the author, 1 May 2014. The airplane would not make its first flight until October 1985; see John Pike, "T-46 *Eaglet* Next Generation Trainer," GlobalSecurity.org, accessed 1 June 2014, http://www.globalsecurity.org/military/systems/aircraft/t-46.htm.

[474] The T-46 program was not formally canceled in defense authorizations language until 1987, but its fate was sealed in 1985 by a letter the CEO of Fairchild Industries—Fairchild Republic's parent company—sent to the Secretary of the Air Force. The letter claimed that the company was losing money on the development effort, but that it expected to make a profit during production, ostensibly by charging the Air Force more. The sense of entitlement apparently offended the SECAF, who quickly aligned the rest of the Air Force and substantial parts of Congress against Republic. Senators Alfonse D'Amato (from New York, where the airframe was manufactured) and Barry Goldwater (from Arizona, where the Garrett F-109 engine that powered it was made) remained allies; Rick Sladek (Lieutenant Colonel (ret.), USAF; former chief of ATC aircraft requirements, ATC/XPRF), personal interview with the author, 13 May 2014.The T-46 was a developmental program, meaning it used a from-scratch design, albeit one that had much in common with the T-37 it was to replace. The New York delegation and Senator Barry Goldwater (from Arizona, where the Garrett F-109 engines that powered the T-46 were made) resisted the program's end, but gaffes and shortcomings, including the botched roll-out, overcame even this considerable political weight; Sladek interview.

[475] Richard H. Emmons, *Specialized Undergraduate Pilot Training and the Tanker-Transport Training System* (Randolph Air Force Base TX: Office of History and Research, ATC, 1991), 21.

[476] Though the budget request *effectively* killed the T-46, Rep. Stratton was still challenging its fate in 1986. The Air Force and other members of Congressional had closed ranks to render this apparently hot debate a mere bit of political theater, however. Sources familiar with congressional hearings have confirmed that often the most emotional statements emerge from legislators speaking about issues that have been previously settled.

for student training in October 2002, then spread to the services' other pilot and aviator training bases.[477] The T-6 is well on its way to replacing all of the services' primary trainers; the Air Force's transition is complete within Air Education and Training Command (AETC).[478] The Navy's equivalent (the Chief of Naval Air Training, or CNATRA) should accept its final delivery in 2017, and the aircraft is scheduled for service through 2030 and beyond.[479] Blood spilled on the floor of Congress under the gallows built for the T-46 fertilized the ground for a new program that came to exemplify jointness.[480] Despite extending the service life of the venerable *Tweet* by an unanticipated quarter of a century, the tolling of the T-46's demise also rang in a unique, previously improbable example of inter-service cooperation—the partnered acquisition of a trainer aircraft by the Air Force and the Navy. Even before the T-6A had supplanted the T-37 at all of the Air Force's training bases, the first Navy T-6Bs had taken their place at Pensacola Naval Air Station's Training Wing Six in 2005, and appeared at the Navy's Whiting Field for pilot training starting in September 2009.[481]

This second case study differs in its scope and essence from the previous AirLand Battle investigation: it is a peacetime acquisition project undertaken between the Air Force and the

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[477] See, e.g., "Defense Watch," *Defense Daily* 215, no. 9 (2002); Megan Orton, "Air Force T-6A *Texan II* Flies 250,000th Hour," Press release by U.S. Air Force Air Education and Training Command 2005; "Raytheon Receives $30 Million Order for JPATS," *Defense Daily* 213, no. 36 (2002).

[478] AETC has responsibility for flight screening and training of all Air Force aviators. The period of JPATS development witnessed the command's transition from the Air Training Command moniker to the AETC designation on 1 July 1993; see *History of Air Education and Training Command 1 July 1993 - 31 December 1995*, vol. 1—Narrative, (Randolph Air Force Base TX: History and Research Office, AETC, 1999), v. The Air Force activated AETC as one of its major commands on 1 July 1993. Prior to that, Air Training Command (ATC) had responsibility for most of AETC's missions. This study refers to the commands by their contemporary names as they appear within the JPATS chronology.

[479] The final Navy delivery is scheduled for 2017; see "Raytheon Receives $30 Million Order for JPATS." Historically, military aircraft of all types fly well past their originally scheduled service lives, but for the T-6's anticipated tenure see Dave Groendyk, "T-6A *Texan II* Reaches Half-Million Flight Hours," 15 August 2007. "CNATRA" is typically pronounced like "Sinatra," a nod to the singer's *My Way* from the "defiant" service; see Chapter 2.

[480] "What really got JPATS started was the failure of the T-46 program," said one of the officers who managed for the Air Force; James DeGarmo (Lieutenant Colonel (ret.), USAF; Raytheon and Hawker Beechcraft manager, various T-6 and AT-6 programs; former JPATS program manager (July 1989-April 1992), Air Training Command Headquarters), telephonic interview with the author, 28 April 2014.

[481] "TRAWING 5 Welcomes New Training Aircraft," U.S. Navy press release, 2 September 2009.

Navy. Like the pinnacle of a well-crafted work of fiction, the successful outcome of the program

in hindsight seems to be a foregone conclusion. Its success was far from guaranteed, though. By

itself, the fact that the Air Force and the Navy would undertake any joint project is a remarkable

turn of events. It is not simply that the Navy's argot—steeped in archaic tradition—clashes in a

Babel-esque antiphony with that of the Air Force, which uses a jarring dialect of modernist

neologisms. The two services have composed a historical chorus of genuine institutional

conflicts, deep-seated distrust, and, most significantly, examples of failed joint acquisition efforts.

The question of partnership between the two services—which are most alike in their strategic

preferences and doctrinal philosophies, yet most often prone to violent, self-destructive

disagreement when they conflict—merits attention in the search for the conditions that allow

inter-service cooperation.

    This chapter is a case study that shows a significant cooperative venture undertaken

between the Air Force and the Navy in an area of core interest to both services: the production of

new aviators via military flight training programs.[482] Process tracing in this chapter tells the story

of the acquisition of the Joint Primary Aircraft Training System aircraft, referred to as the JPATS

(pronounced *JAY' pats*) aircraft or simply 'JPATS'—a label that encapsulates the aircraft as well

as associated ground training assets. Overcoming habitual institutional distrust, the Navy and the

Air Force collaborated to procure a shared aircraft and cooperated on a mutual training pipeline

from which both Air Force and naval service aviators could matriculate. JPATS had more

external significance attached to it than the mere training of prospective military pilots, a task

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[482] Both services train pilots, who occupy most of the spots available in aviation training programs. Rated officers
with assigned aviation duties other than pilots in the Navy are called Naval Flight Officers (NFOs). In the Air Force,
all were previously trained and rated as navigators, and then received additional designations, such as Weapons
System Officer (WSO) depending on the aircraft to which they were assigned. After 2011, all such Air Force
officers are called Combat Systems Officers (CSOs), reflecting an Air Force desire to create "universally assignable"
flyers "who are all electronic-warfare qualified;" see Michelle Tan, "AF Churns Out Cross-Trained Back-Seat
Fliers," *Air Force Times*, 4 May 2011. http://www.airforcetimes.com/article/20110504/NEWS/105040327/AF-
churns-out-cross-trained-back-seat-fliers.

that nations pursue using a wide variety of airframes. It initially had the attention of the

exogenous defense establishment as an issue of jointness and civil-military relations, and

received periodic attention as gender issues, cost increases, and corporate protests over the

military's contract-award process arose over the course of its life.

The architects of the program shrewdly packaged their efforts in the voguish wrap of

jointness. Taking measure of the recent passage of the Goldwater-Nichols Act, the novel

program boldly set its mainsail in line with the most recent winds of civil-military change. The

program retained its cachet in both the services and the larger defense establishment because of

this political savvy, allowing the joint procurement effort to develop a momentum that made it

resistant to dissociative forces acted upon it by individual services.

B. Themes of This Chapter

The acquisition of the JPATS trainer and, to a lesser extent, the establishment of joint primary

aviation training programs, were, for about a decade, successful endeavors. This example of joint

cooperation shines even though the Air Force and the Navy are perhaps the two U.S. military

services least apt to cooperate—especially on an acquisition program. While at least one Navy

source claims, "examples of USN-USAF cooperation have been legion," this inter-service

relationship is probably better known for a rivalry that "has at times been particularly intense,

even legendary."[483] The two services often find themselves working in close proximity in the

same theaters, which has driven a frequent need for civil, if not brotherly, coexistence. However,

the Air Force and the Navy have seldom worked so closely, and when roles and missions

disputes do arise, they reflect unbridled hostility. The focus of this chapter is therefore on a

'most-difficult' or 'least-expected' example of joint cooperation. Phillip Meilinger wrote that

Brigadier General Billy Mitchell's "inordinate and near-neurotic hatred of the Navy…left a

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[483] Peter M. Swartz and Karin Duggan. "U.S. Navy - U.S. Air Force Relationships: 1970-2010." Alexandria VA: Center for Naval Analysis, 2011, 2.

legacy of animosity between the two services that has never fully healed."[484] The chapter begins

with some historical examples to demonstrate this assertion. It also contains a brief discussion of

the importance the military services place on basic and core specialized training programs. These

programs impart a unique service identity on each new recruit in addition to imparting specific

technical knowledge; they are therefore unlikely areas for close inter-service cooperation.

A second theme of this chapter is that, although in hindsight joint primary flight training

and the aircraft to perform it in might seem like an obvious, foregone conclusion, it took the

constant input of energy above and beyond that of a standard bureaucratic churn to keep this

objective alive. There were several issues at different times in the life of the program that could

have completely derailed both the joint acquisition project and the multi-service aviation training

associated with it. Individuals who had detailed knowledge of their technical roles the program, a

subtle appreciation for the interest-group politics that affected it, and an ability to exploit the

'jointness' *zeitgeist* that marked the era of the JPATS appeared repeatedly in the story and acted

to keep its underlying vision alive. There is no one person who can claim to have spawned,

incubated, and hatched the JPATS program, but there are several who can legitimately claim that

they overcame obstacles that could have prevented a truly joint effort from being realized.

Indeed, the major characteristic that emerges on balance in surveying the cast of characters

responsible for bring the JPATS to fruition is their singular focus explicitly on jointness.

While 'expected' is a fair description of the JPATS development, 'foregone' would be far

too deterministic based on the available history, and this narrative emphasizes the sheer

willpower that military officers who saw it to completion exhibited in keeping it alive. For mid-

level 'action officers'—military jargon for the non-executive staffers who get work done in the

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[484] Phillip S. Meilinger, ed. *The Paths of Heaven: The Evolution of Airpower Theory* (Maxwell Air Force Base: Air University Press, 1997), xv.

bureaucracy—the effort was most extreme, and often at its most frustrating, when taking on the parochial views of others within their own services.[485] That is not to say inter-service friction was nonexistent. As Raymond 'Doc' O'Keefe, a naval officer who was at the focal point of the project during its most critical years, put it, the Navy was initially "really not interested in participating," but was "[e]ventually told to participate and to find a way to pay for the program."[486] Despite internal obstacles and this less-than-enthusiastic joint foundation, the Navy found itself embraced by Air Force figures eager to make an inter-service program work, and came to realize that it could find enough benefit in the accommodations offered to go along with the project as a joint undertaking.

The third theme of this case study is the outsized role of exogenous forces in creating jointness. In its role of defense oversight, Congress frequently acted as an instigator that spurred the Air Force and the Navy to action through fear, cajolery, frequent public attention, and, per its exclusive constitutional authority, permission to spend money to purchase aircraft and associated kit. DoD appears as an exogenous driver of jointness later on in the process, but in most cases its actions seem to be a response to earlier congressional direction. In one notable instance, focused attention on JPATS came as a result of a special interest of the White House. Despite the ample opportunity for jointness afforded by Congress' attention and positive reinforcement given to efforts in that direction, responsibility and initiative for creating a functioning cooperative program nevertheless remained with the services. Their fears and interests interacted over many

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[485] According to retired Lieutenant General Tome Walters, "All of my big fights with JPATS were internal to the Air Force, and they were all internal to Air Training Command, and they mostly with the DO [Director of Operations] shop." The operations directorate tended to act as if all aircraft decisions were their purview, but a series of political confrontations in which the planners and programmers prevailed eventually shifted power to that part; Tome H. Walters, Jr. (Lieutenant General (ret.), USAF; former Director (2000-2004), Defense Security Cooperation Agency; former Director of Requirements (August 1989-December 1991), Headquarters Air Training Command), telephonic interview with the author, 28 April 2014.
[486] Raymond O'Keefe (Raytheon Aircraft Corporation; former naval aviator, instructor pilot, and CNATRA standardization-evaluation examiner; former Navy JPATS requirements officer), written replies to author's questions, 5 May 2014.

years with legislative priorities and direction; both the endogenous and exogenous strata of the U.S. defense organization played substantial, symbiotic roles in forming JPATS.

A fourth, related theme that emerges is the relative strength of a congressional mandate relative to one issued by the Pentagon or the service bureaucracies. An interesting entailment made possible by the JPATS, joint flight training, was an initiative of DoD. Secretary of Defense Les Aspin gave an official directive in April 1993, Deputy Secretary of Defense John Deutch approved the services' plans for implementation in October 1994, and the services wasted no time in visibly complying with that explicit, exogenous order.[487] By capitalizing on the mood of Congress to 'paint everything purple' in the wake of Goldwater-Nichols, DoD caused the Air Force and Navy to restructure aviation training programs in a way that would permit joint pursuit of primary training in the new equipment being purchased. Exploiting a prevailing favor toward jointness, DoD brought the services together—for a time—in a way they would not have pursued on their own, all the while reminding Congress of its desire to see more inter-service cooperation. The endogenous defense establishment, recognizing the strength of the nested set of exogenous interests at play, complied with the direction for more than a decade before preference and convenience led them to slink away, shirking a long-departed Defense Secretary at a glacial pace.

In an essay that has had considerable staying power in the study of technological innovation, John Law described the "heterogeneous engineering"—a coalescence of technological innovation and human initiative—that made it possible for Portuguese explorer Vasco de Gama to sail around Africa and into the Indian Ocean, a journey that had not

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[487] Aspin's decision letter directed the Navy and Air Force secretaries to "consolidate initial fixed-wing aircraft training for all Services and tradition to a common primary training aircraft." Deutch extended "approval for Air Force/Navy plans to implement these joint fixe-wing flight training programs, as well as for their additional joint training initiatives; see "Roles, Missions, and Functions of the Armed Forces of the United States" (signed letter); Secretary of Defense official correspondence; Personal collection of Raymond "Doc" O'Keefe, Universal City, TX, 3; 1.

previously been completed by European explorers. Reaching southwest India for the first time in 1498, he returned in 1502 with a heavily armed fleet that bombarded the city of Calicut and brought the trans-oceanic spice trade under Portuguese domination for the next century.[488] The specific events that made de Gama's journey possible are not relevant to the case of the JPATS development, but Law's treatment of the attendant technological advance and stabilization, incorporating as it does theories of constructivism and systems engineering, is a helpful framework for understanding this case study.

What makes the T-6 and joint aviation training almost as remarkable as the conquering of a previously impassable trade route is the number of complex adjustments to military systems and ways of thinking that had to happen before the innovation was possible. The technological *advances* made during the development of the airplane and associated training constructs are not on par with the development of the compass, the advent of celestial navigation, advances in shipbuilding, and the discovery of ocean currents that occurred over centuries leading to de Gama's journey. The weaving together of systems by a number of disparate actors, however, united only by a beckoning promise of joint aviation training is in some ways as remarkable as the earlier accomplishment. The political forces aligned against joint cooperation are in many ways as formidable as the Cape of Fear and the dangerous African coastal currents that made sail from Europe to India a fool's errand for so many years. A team of heterogeneous engineers, united and focused in their aim to make joint primary aviation training possible, exploited associative forces and overcame dissociative, countervailing elements to stabilize a system that

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[488] John Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," in *The Social Construction of Technological Systems*, ed. Wiebe E. Bijker, Thomas P. Hughes, and Trevor J. Pinch (Cambridge: The MIT Press, 1989), 114-15.

achieved their vision.[489] Equipped with this analogy, the study next turns to some of the

obstacles to be overcome in pursuing the JPATS.

C. Factors Influencing Joint Acquisition and Training
1. Navy-Air Force History of Inter-Service Rivalry
If the Army and the Air Force have bickered like siblings from the same family, feuds between

the Air Force and the Navy have at times taken on a much darker, more strident tone. Whereas

the tension between early incarnations of the air service and the Army existed over the question

of the newer service's independence and mission priorities, the two services at least tacitly

always acknowledged that the modern battlefield would require the services of each. In contrast,

the Air Force and the Navy early on seemed to have disagreed in ways that suggested they

viewed each other as existential threats.

The Air Force and the Navy have had a strained institutional relationship even prior to the

existence of the former as an independent service. Throughout the early years of the Air Service

and Air Corps, the Army's aviation branch fought the Navy on two main issues: long-range

shore-based patrols and anti-submarine warfare. The air service opposed the Navy conducting

the former, and the Navy objected to land-based aircraft involvement in the latter.[490] Billy

Mitchell, the flamboyant air power advocate, clearly got under the skin of several senior Navy

figures. Normally dismissive of any type of claim on either its utility or autonomy, the Navy

resented Mitchell's publicity campaigns centered on building an independent air service, as he

often used the Navy's contribution to national defense as fodder. Rear Admiral William Moffett,

who was the first chief of the Navy's Bureau of Aeronautics, derided Mitchell as "of unsound

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[489] Law defined heterogeneous engineering as the successful association of people, skills, artifacts, and natural phenomena into stable networks that maintain structure in the face of other dissociative forces; ibid., 129.
[490] Swartz and Duggan. "U.S. Navy - U.S. Air Force Relationships," 2011, 11.

mind and suffering delusions of grandeur."[491] Mitchell and Moffett developed a rivalry as the

latter attempted to make aviation an integral part of naval fleet power projection. Mitchell raised

the Navy's ire by making it, in an attempt to prove the superiority of the bomber to the battleship,

the butt of one of his most notable aviation trials. In September 1921, with his pilots dropping

bombs from several Army Air Corps aircraft, Mitchell oversaw the sinking of the captured

German battleship *Ostfriesland* and other warships anchored for the test.[492]

Far beyond simply showcasing the effectiveness of aerial bombardment against a maritime

military target, Mitchell went so far as to claim that the Air Force could take responsibility for

coastal defense and implied that the Navy was quickly becoming irrelevant. For all his bluster,

he did not achieve the independent Air Force he desired or impact the construction of battleships,

but his methods—which included stoking media hype and a blatant disregard for restrictions and

publicity limitations imposed by the Navy and War Department—"enhanced Mitchell's public

standing, but…poisoned already strained relations with his superiors and the Navy

Department."[493] An ironic outcome of the demonstration was that it alarmed the Navy into

accelerated investigation of air power in pursuit of naval aims.[494] Mitchell followed up his first

demonstration with vitriolic criticism of the Navy and War Department following the crash of

the *Shenandoah* dirigible in 1925, which led to his court martial and retirement.[495]

Even after Mitchell's exit, the Army and the Navy struggled to find agreement over the

roles and missions that their respective air assets would undertake. The Navy's resentment about

its treatment at the hands of Army aviators grew, as the service suffered the ignominy of having

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[491] Eugene M. Emme, "The American Dimension," in *Air Power and Warfare: The Proceedings of the 8th Military History Symposium*, ed. Alfred F. Hurley and Robert C. Ehrhart (Washington DC: Office of Air Force History, 1979), 69.
[492] Alfred F. Hurley, *Billy Mitchell: Crusader for Airpower* (Bloomington: Indiana University Press, 1975), 66-68.
[493] Trest, *Air Force Roles and Missions: A History*, 36-38.
[494] Sterling Michael Pavelec, "By Land and Sea: Non-Carrier Naval Aviation," in *One Hundred Years of U.S. Navy Air Power*, ed. Douglas V. Smith (Annapolis: Naval Institute Press, 2010), 305.
[495] Swartz and Duggan. "U.S. Navy - U.S. Air Force Relationships," 2011, 10.

its aircraft assigned to Army commanders, even those that ranged as far as three hundred miles

from the coast. While trying to pursue its own aviation programs to project fleet power, the Navy

could not seem to escape being drawn into coastal defense on behalf of the Army, which itself

exhibited quite a bit of apathy toward the mission. In the meantime, the Army made several

efforts to stop the Navy from procuring any more land-based aircraft for experimentation or

other uses for which it might determine later need, thereby tightening the spiral of rivalry.

However, the 1931 Pratt-MacArthur Agreement established the Navy's air power as roughly that

which would be "based on the fleet and move with it" to complete naval missions that did not

include coastal defense.[496] Even that brief truce began to spin apart immediately following

Admiral Pratt's retirement from the position of Chief of Naval Operations, and the Navy again

competed with the air service for supremacy in maritime scouting and coastal defense.[497]

The scope of WWII offered both services a sufficiently large stage to showcase their

contributions to national defense without significant inter-service arguing. Several cooperative

efforts arose, including the well-known launch of Army Air Force bombers from the carrier

U.S.S. *Hornet,* a mission to strike mainland Japan under then-Lieutenant Colonel James

Doolittle's command.[498] After WWII ended, however, the services tackled the apportionment of

roles and missions among the U.S. military services, and the Air Force and the Navy again

became wrapped up in a dispute that had winner-take-all overtones. The Navy had realized

during the war that its new preferred power-projection strategy would lean heavily on carrier-

launched strike aircraft. It also appreciated the emerging and dominant role that nuclear strike

would play in the overall U.S. defense strategy. During the Key West Conference to 'settle' the

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[496] MacArthur-Pratt Agreement.

[497] The "agreement was informal, binding only while Admiral Pratt was in office," and his successor, Admiral William Standley, "repudiated" it; see Trest, *Air Force Roles and Missions: A History*, 55.

[498] James H. Doolittle and Carol V. Glines, *I Could Never Be So Lucky Again* 1992 Bantam paperback ed. (New York: Bantam Books, 1991), 2-8.

issue of roles and missions, the Navy fought mightily to retain its aviation capabilities. Key West hardly put the matter to rest, though, with each service emerging with "its own interpretations of what had been agreed to, which could neither be proven nor falsified by reference to a written transcript of the proceedings."[499] When it became apparent that the Air Force's long-range bombers were gaining traction in defense debates, usurping funding for the large aircraft carriers the Navy desired, service leadership took drastic action. The 'Revolt of the Admirals,' a coordinated campaign to discredit the Air Force's planned B-36 bomber, demonstrated that the Navy was willing to take extreme measures, even inter-service subterfuge, to maintain its significant aviation fleet and place of prominence in the strategic arsenal.[500]

The 'New Look' and 'Balanced Response' eras offered additional opportunities for competition, mainly with respect to the stewardship of the nation's nuclear force. Wresting control of both bomber- and ICBM-delivered warheads, the Air Force's share of the defense budget surged to nearly fifty percent.[501] The Navy was determined to stay in the business of strategic force projection, and invented its leg of the 'nuclear triad' by developing submarine-launched ballistic missiles (SLBMs). Owen Coté credited the intensity of the inter-service rivalry with providing the fuel that powered the Navy's drive to develop the Polaris missile, which he described as the Navy's most innovative contribution to U.S. nuclear weapons doctrine.[502]

Peter Swartz, writing about instances of close cooperation between the Air Force and Navy, nevertheless acknowledged that a "'[c]ulture of rivalry" greatly overshadowed [the] record of

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[499] Barlow, *Revolt of the Admirals*, 123.
[500] "At a dramatic point in the [House Armed Services Committee B-36] hearings, Cedric R. Worth, formerly a special assistant to the Assistant Secretary for Air and the Under Secretary of the Navy, admitted he was behind the anonymous document that led to the investigation. Worth 'recanted and repudiated' the charges made in the document." Worth was suspended while the Navy investigated "'preparation of the anonymous document and distorted propaganda'" aimed at the Air Force; Trest, *Air Force Roles and Missions: A History*, 128.
[501] Lewis, *The U.S. Air Force Budget and Posture Over Time*, 15. Coté wrote that "[d]uring Eisenhower's first term, the Air Force consistently received over half of all defense spending, the Navy roughly a third, and the Army roughly a fifth;" Coté, "The Politics of Innovative Military Doctrine," 234.
[502] "The Politics of Innovative Military Doctrine," 2.

cooperation" between the services.[503] This history of frequent tiffs and sporadic cooperation colored the aura of inter-service relations when planning for the JPATS began. More damning to a shared acquisition effort than previous rivalry, though, may have been ham-fisted exogenous involvement in procurement programs. Both services retained fairly recent institutional memories about the TFX program, an effort to design and produce a new tactical fighter with a combination of deep-strike, fleet-defense, and nuclear-delivery capabilities. Under Robert McNamara, the Office of the Secretary of Defense (OSD) directed 'commonality' in procurement for the jack-of-all-trades system, then chose a different defense contractor's design over the one the Navy and the Air Force had determined to be the best.

Both decisions infuriated the military leadership of the services, undercutting their equipment-procurement prerogatives, but McNamara held firm, keeping the civilian service secretaries in his camp and successfully deflecting considerable congressional fury and public attention over his decisions. Despite McNamara's unprecedented display of civilian control of the services—especially remarkable for a major procurement effort—the effort fell far short of his vision, as only the Air Force purchased the TFX, which became the F-111 *Aardvark*. As the opening chapter of this study notes, one element of the contemporary meanings 'jointness' has evoked is a euphemism designed to substitute for and overcome the political baggage attached to 'commonality' after the TFX debacle. While not a source of friction between the services *per se*, TFX and other programs like it did serve to inculcate a distrust of joint acquisition of common platforms in general, and strengthened both services' proclivities to pursue their own equipment purchases whenever they could.[504]

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[503] Swartz and Duggan. "U.S. Navy - U.S. Air Force Relationships," 2011, iv, 6.

[504] At this writing, the services retain this suspicion, as evidenced by a study commissioned by the Air Force that shows joint acquisitions do not save the services money and tend to exhibit greater cost-growth characteristics; see Mark A. Lorell et al., *Do Joint Fighter Programs Save Money?* (Santa Monica CA: RAND Corporation, 2013), 9-17.

2. The Shift to Specialized Pilot Training & Inter-Service Aviation Training Differences

Historical differences, however, were not the most immediate obstacle to be overcome in the quest for joint cooperation in aviation training. One of the most critical shifts in philosophy for the Air Force with regard to its training of pilots involved the movement from a 'universal' approach to undergraduate pilot training (UPT) to a specialized, or 'tracked' system. An underlying premise upon which JPATS was predicated was the idea that both services would train their fledgling aircrew in a 'specialized' undergraduate pilot training (SUPT) program rather than a general scheme (UPT). As the name suggests, in UPT all students flew the same syllabus, which included a phase in the T-37 followed by training in the supersonic T-38. The change was more of an oscillation than a shift, since the Air Force had previously had separate pipelines before 1959, when it transitioned to a system that gave all pilots the same pilot-training experience. In the short-term institutional memory of the military, though, it took on the importance of a tectonic movement.[505]

Some of the fast-jet training was less applicable to students who did not end up flying fighters, and there were questions about UPT's ability to produce a healthy crop of motivated pilots.[506] Resistance to change was nonetheless high. A study in 1976 had identified cost savings and improvements in the quality of student training by reverting to specialized training, but it was overwhelmed by opposition from individual major commands and a reluctance to undertake

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[505] According to an ATC historical timeline, "specialized undergraduate pilot training came to an end and generalized UPT began" on 24 January 1959, when the last B-25 class graduated at Reese Air Force Base, Texas; see Emmons, *SUPT and TTTS*, xi. To change back to SUPT, however, required on the Air Force "pressure from several directions—from the [General Accounting Office] GAO, [Office of the Secretary of Defense] OSD, and congressional committees—to consolidate its flight training with that of other military services;" ibid., 13. It also required at least three formal ATC-Air Staff studies before becoming a realistic consideration, a fine example of a bureaucracy stalling an external decision with which it did not enthusiastically agree; see ibid., 12-16.

[506] As Air Force Vice Chief of Staff John Roberts acknowledged, UPT also produced a good deal of disappointment: "We motivate them all through training to be a fighter pilot, and then all of a sudden, only 25 percent of them get to fly fighters, and we have 50 to 75 percent disappointed;" see John W. Roberts (General (ret.), USAF; former Air Force Vice Chief of Staff), interview with Dr. James C. Hasdorf and Mr David W. Shircliffe, 2-4 November 1982.

a major trainer replacement program during a period of national fiscal austerity.[507] As the

Strategic Air Command (SAC) commander, General John Chain, expressed it in 1987, there was

a perception that a pilot who did not fly the T-38 was a "second-class citizen" in the realm of Air

Force aviation.[508] He demanded that his bomber pilots be trained in the T-38, as they are to this

day, despite the fact that a blunt-nose B-52 has few performance characteristics in common with

the pointy trainer.[509] Cycling all Air Force students through the same pipeline subjected the T-38

to lots of fatigue stress, so development of the T-1 business jet as a training platform for tanker

and transport pilots provided a way to avoid rapidly flying the former to its design service limit.

With the budgetary breathing room afforded by the Reagan Administration's cash infusion, a

T-38 fleet that was getting stressed too quickly by UPT, and growing dissatisfaction with the

now-elderly T-37, several factors coalesced within the Air Force to make SUPT an idea with

enough economic momentum to carry the day.[510]

At the same time, the visible failure of the T-46, which had been a 'developmental'

program, led the Air Force to realize that its replacement trainer would be 'non-

developmental'—a modification of an existing airplane—rather than one designed from

scratch.[511] Another attempt to get a replacement trainer required some nimble justification,

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[507] Emmons, *SUPT and TTTS*, 13-14.

[508] Chain's quote is recorded in ibid., 22. The Tanker-Transport Training System (TTTS), associated with the T-1 *Jayhawk* aircraft, had originally been called the Tanker-Transport-Bomber Training System (TTBTS), but reverted to the TTTS after Chain had the opportunity to argue his point at the fall 1987 Corona Conference, a recurring meeting of Air Force general officers; see ibid., 22-24.

[509] Chain's complaint retains some contemporary merit. Student and instructor banter at Sheppard Air Force Base's Euro-NATO Joint Jet Pilot Training (ENJJPT) has included the phrase, "Take it around—use all eight." This esoteric barb implies that a student pilot struggling with landings—or any other phase of the program—might end up flying a B-52, one of the least-desired outcomes for ENJJPT graduates, most of whom go on to fly fighters.

[510] Brigadier General Michael McGinty, serving as ATC's Deputy Chief of Staff for Plans and Requirements, noted that given the costs of T-1 procurement, T-38 replacement, and comparative operating costs, the cost savings to the Air Force was 3.3 billion dollars over the thirty-year schedule that the Trainer Masterplan envisioned; see Emmons, *SUPT and TTTS*, 57.

[511] The military refers to this type of procurement as commercial-off-the-shelf (COTS) acquisition. For aircraft, as was the case with JPATS, although the final product is based on an existing production model, the redesign to meet military specifications is still extensive. With the T-6's redesigned canopy, cockpit dimensions, engines, egress

because a robust T-37 service-life extension program (SLEP) seemed to offer decades more life

from the aircraft while avoiding the cost of a new program. This raised a second fear: that the Air

Force would end up stuck with a T-37 for several more decades, an option that was 'perfectly

fine' in the eyes of budgeting officials but did not provide the enhanced training desired for up-

and-coming combat aircraft. ATC's planners therefore had to show that the T-37 was

qualitatively unfit to continue as the Air Force's primary trainer, and did so by emphasizing its

lack of power, safety deficiencies, and outdated avionics, which contrasted with the modern

capabilities of tactical aircraft that students flew after completing training.[512] The document that

ultimately led to acceptance of SUPT was the 1988 USAF Trainer Masterplan, which laid out

alternative courses of action in an easy-to-follow parallel format, while providing definitive,

long-term cost and quality analyses that made SUPT an easy choice.[513]

Once the SUPT decision became final, with the T-1 and the T-3 programs underway, the

Air Force was able to engage the Navy on an apples-to-apples comparison about primary

aviation training.[514] With the T-3 answering many of the concerns about seating configuration

for beginning aviation students and the T-1 relieving the pressure on the T-38 fleet, the Air Force

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system, and flight control compensation, to name just a few pertinent systems, it has fewer than ten percent components that are identical to the Pilatus PC-9 upon which it is based; Sladek interview, 13 May 2014.

[512] Stephen D. Chiabotti (Colonel (ret.), USAF; former Chief of Aircraft Program Management (ATC/XPRP), December 1987-July 1992, Air Training Command Headquarters), e-mail exchange with the author, 6 June 2014.

[513] The 1988 master plan laid out four options for revised pilot training—SUPT, modernized UPT (MUPT—UPT with a quicker, more expensive T-38 replacement), all-through trainer system (ATTS—utilizing a single airframe for all phases), and alternate SUPT (ASUPT—which required a single aircraft to handle both phases of bomber-fighter training but left tanker-transport training split between the T-37 and the TTTS aircraft). Offering detailed life-cycle cost estimates for all four options, the report concluded that SUPT offered the highest procurement, operations, and support savings while providing "the highest quality graduate;" United States Air Force Trainer Masterplan; SD III-1; ATC Periodic History 1988; Vol. X; Air Education and Training Command History Office, Randolph AFB TX, iii, 29, 35. As with all of the master plan documents, the drafting author's name is nowhere to be seen in the text. Executive-level leaders take credit for and answer to the consequences of action-officer work, which makes errors blissfully unattributed but causes good effort to languish in thankless anonymity.

[514] The T-3 *Firefly* was a side-by-side aircraft manufactured by British aircraft manufacturer Slingsby as an 'enhanced flight screener' (EFS) aircraft for the Air Force—it is further discussed in the following section of this chapter. Flight screening was a pre-pilot-training program designed to gauge candidate aptitude prior to the full pilot training syllabus. The Air Force found that the savings in attrition avoidance from the UPT pipeline offset its costs; the Navy does not screen candidates and has an appreciably higher attrition rate from primary flight training.

had considerable space to maneuver in the realm of primary training. The first-stage pipeline—already the Air Force's area of concern—was an arena it was much more inclined to enter than one that involved buying the Navy's more capable, more expensive T-45 and trying to fit it into an Air Force training scheme. For the Navy, a more modest shift that involved increased simulator time and moving from a three-phase to a two-phase training syllabus was already underway and facilitated consideration of mutual primary trainers.[515]

One of the first bi-service documents to appear on the topic of jointness in aviation training is a memorandum of understanding on the development and acquisition of trainer aircraft. Noting the Air Force's "major change in philosophy" evidenced by the "implementation of specialized training tracks," it went on to speculate on some possible areas where common acquisition could be beneficial, and clearly identified "commonality in primary trainer aircraft"—a replacement for the T-37 and T-34—as the option most likely to bear fruit.[516] It mentioned and dismissed as "unfeasible" the Air Force's use of the T-45.[517] Thus the Air Force early on in the JPATS process seems to have engaged the Navy to manipulate Congress's joint mandate for a common trainer in a direction away from the T-45 advanced-trainer nudge it had received. Instead, it pushed for a primary-trainer project that was palatable to both services and certainly preferable to the Air Force.[518] This became the first of many compromises the Air Force would engineer as

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[515] The Navy, and the Marine Corps and Coast Guard along with it, eliminated its "intermediate" stage of pilot training; see Ed Boyington, "CNATRA: Situation Report," *Wings of Gold* 27, no. 3 (2002): 23.

[516] Memorandum of Understanding: USAF and USN Concerning Development and Acquisition of Trainer Aircraft; SD III-15; ATC Periodic History 1988; Vol. X; Air Education and Training Command History Office, Randolph AFB TX, 1, 2.

[517] Ibid., 2.

[518] The singers of the memorandum were three two-star flag officers, one (Gressy) the director of the Navy's Aviation Manpower and Training Division, the other two (Hall and Boyd) are Air Force major generals who worked for the assistant secretary for acquisition and the deputy chief of staff for plans and operations, respectively. The analysis in the memorandum, however, came from the plans division at Air Training Command. This is an example of Chiabotti's assertion that "planners in the requirements shop of the major command buying and using the system" pass their decisions "on to the requirements division of the Deputy Chief of Staff for Operations in the Pentagon," which are "eventually validated by the Joint Requirements Oversight Council [JROC] on the Joint Staff;" Stephen D. Chiabotti, "'Heterogenius' Engineering and JPATS: Leadership, Logic, and Acquisition Requirements," in *Concepts*

it led the march to a joint primary trainer while it kept its dearest institutional goals in this area intact.

Agreeing on equipment was a serious hurdle, but once it was overcome, a more obvious question about jointness arose: Why not have the services conduct joint training with each other's students? Ultimately, DoD would mandate such a course of action. There were reasons why it was not a 'natural' tendency among the services, even with common equipment. An Air Training Command (ATC) study of the issue revealed several substantial differences between the ways the two services trained. From the way they viewed airspace to the amount of close control exerted over syllabus timing, the Air Force and the Navy differed in so many respects that they did not determine cooperation to be beneficial of their own volition.[519] It required exogenous orders, which were complied with in short order, but never implemented with as much enthusiasm as the quest for joint procurement.

With the unlikelihood of Air Force-Navy cooperation setting the backdrop, a remarkable sequence of activities by a diverse cast of characters was necessary to overcome competitive and dissociative tendencies, but they combined to result in an acquisition program that was joint in fact as well as name.

II. Acquisition of the JPATS Aircraft and Establishment of Joint Training Programs

As the opening of this chapter established, Congress was pushing the Air Force to think hard about changing its acquisition strategy for replacement of the T-37 and T-38. The demise of the

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for Air Force Leadership, *Volume 5* (Maxwell Air Force Base AL: Air University Press, 2008), 266. A pair of relatively junior staff officers representing the services' respective training commands briefed the JPATS concept throughout the Pentagon, including the all-important JROC, then capitalized on their time in Washington to socialize the idea on Capitol Hill; DeGarmo interview.

[519] The differences of practice in administering training remained a point of friction throughout the program. Lieutenant Colonel Derek Bartholomew, an Air Force instructor who served with the Navy at Whiting Field, contrasted a naval grading system "that could be done on the back of a napkin" with an "overcomplicated, computer-based system the Air Force had," resulting in "huge cultural push-back on adapting" the new grading system; Derek Bartholomew (Lieutenant Colonel (retired), USAF; instructor pilot, Joint Specialized Undergraduate Pilot Training (1999-2003), NAS Whiting Field FL), written reply to author's questions, 2 May 2014.

T-46 was a bitter event in Congress, and legislators showed an interest in controlling the next iteration.[520] Explicit guidance came in the form of the National Defense Authorization Act (NDAA) for fiscal year 1989, which directed OSD to submit a report to the House and Senate Armed Services Committees "that outlined DoD's plans for future training aircraft for the Navy and the Air Force."[521] A report from the conference committee, the body that adjudicates differences between House and Senate versions of a bill prior to passage, put a finer point on the matter. It recommended that the Air Force reverse its replacement strategy, completing the T-38 recapitalization first, so that it could take advantage of "a warm production line" that was making T-45s for the Navy.[522] The Air Force, with the stench of the T-46 still in Congress' nostrils, realized that it had to comply with the broad intent for jointness and its perceived cost-savings benefits, but it feared being forced to an accept an airplane whose costs had grown considerably and was not tailored to any plan the Air Force had for its future pilot training. It also inferred that exogenous patience for developmental programs had been exhausted, and that it would have to modify an existing commercial design, as it had in developing the T-1 from the Mitsubishi *Diamond*, for the new primary trainer.[523] The service was politically informed and incentivized to lead the charge in a different direction while still complying with the basic intent of the legislative guidance.

It was in these somewhat desperate straits, its autonomy with regard to trainer aircraft procurement threatened, that the service developed a 'master plan' that charted a way forward from the smoking hull of the T-46 program. The 1988 *U.S. Air Force* Trainer Masterplan,

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[520] "The T-46 ended with nasty comments being traded on the floor of the U.S. Senate between the chairman of the Armed Services Committee, Barry Goldwater, and the Senator from New York...Alfonse D'Amato;" Walters interview, 28 April 2014.

[521] Richard H. Emmons, *A Training System for the 21st Century: JPATS and the T-6A* (Randolph Air Force Base TX: Office of History and Research, AETC, 2004), 2.

[522] Ibid., 3. See also "National Defense Authorization Act for Fiscal Year 1989." 1988.

[523] See, e.g., Thomas A. Manning et al., *History of the Air Training Command 1991*, ed. Thomas A. Manning, vol. 1—Narrative, (Randolph Air Force Base TX: History and Research Office, ATC, 1993), 219.

released in April, discussed a bevy of options the Air Force could pursue in training new pilots, and succeeded in focusing attention within the service as well as in external organizations.[524] The 1988 plan was so effective that successive editions evolved into a defense department-wide product. The *Department of Defense* 1989 Trainer Aircraft Masterplan served as the vehicle that answered Congress' call for the services to consider joint acquisition and platform commonality, but it also made a distinct bid for the Air Force to take its own fate in its hands with regard to a T-37 replacement. Putting the focus on a primary trainer required the Air Force to 'sell' the program to the Navy, who was not then considering such a move.[525] Congress' desire for visible joint procurement, combined with the Air Force's fear of losing self-determination of its trainer fleet, set the stage for a long season of compromise and accommodation that constituted the most successful joint aspect of the JPATS—aircraft procurement. A second joint aspect—that of joint training programs—came about more as a result of exogenous influence from DoD. Since it did not require the production of new equipment, the services were able to implement it immediately. As it did not address a pressing service problem or stay in the view of Congress for long, though, this initiative faded from practice as the JPATS era continued.

A. Joint Acquisition of the T-6 Texan II
1. The Winding Road to Requirements
Stephen Chiabotti argued that the leadership required for significant changes in military technology lies neither with the senior flag officer leadership of the services nor the acquisition-specializing program managers who supervise the procurement of the new technology. Instead, he posits that it lies with the planners who define the requirements for the new system, and in so doing struggle to balance wishes for performance, safety, and accommodation of operators

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[524] According to Walters, the primary drafter of the 1988 master plan (emphasis in title added) was Colonel Willard "Bill" Grosvenor, who was rewarded with command of the 46th Flying Training Wing at Laughlin Air Force Base, Texas, for his effort; Walters interview, 28 April 2014. Chiabotti worked for Grosvenor at the time and had a substantial hand in the both the 1988 and 1989 versions.
[525] Emphasis in title added.

against the inevitable barrier of cost that each of these desires adds.[526] Process tracing the

development of the JPATS leads to concurrence with this conclusion, and adds the following

additional observation pertaining to jointness: careful weaving of the requirements with

accommodation for a sister service, in concert with building political enthusiasm for the resultant

'joint' outcome, and combined with an explicit long-term planning dimension, imparted

significant cooperative momentum. Absent the effort to build sufficient inertia, the joint

undertaking may have easily fell victim to a raft of dissociative forces. As the 1989 DoD master

plan for training aircraft stated, *"Joint specification of requirements and timing are key to the*

process."[527]

How to Buy an Airplane: A Primer
Given its place at the intersection several streams, including military bureaucracy, congressional

oversight, and cautious defense contractors, a military acquisition—even something as sleek and

exciting as airplane—is a baroque process with a duration that has come to be measured in

decades. The JPATS trainer, though it was conceived in the wake of the T-46 as a commercial-

off-the-shelf (COTS) program, was no exception. Acquisition is a process that involves mutual

interaction of hundreds of individuals, but its milestones are marked in the form of documents

that, taken together, show a program's evolution as it proceeds down a path ostensibly informed

by its original purpose for existence. Fortunately, the true jointness of the JPATS program was

forged in the process to draft and vet just a handful of these documents. This analysis need not

cover the entire collection in detail, a task that official histories have tackled admirably. To

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[526] Chiabotti, "'Heterogenius' Engineering and JPATS," 265.
[527] Department of Defense 1989 Trainer Aircraft Masterplan; SD III-12; ATC Periodic History 1988; Vol. X; Air Education and Training Command History Office, Randolph AFB TX, 4-1, emphasis in original. According to Walters and Kross, Chiabotti was the primary author of the 1989 plan that garnered DoD sanction; Kross interview, 1 May 2014; Walters interview, 28 April 2014.

provide a frame of reference, though, a brief discussion of the paper trail and the thousands of hours of cooperative labor it represents follows.

Although the JPATS story now spans decades, the real kernel of jointness at its heart formed as a result of intense efforts that began with the T-46 failure and culminated with a bi-service agreement about what a primary training aircraft and associated support systems needed to be able to do. The formal agreement took the form of an 'Operational Requirements Document' (ORD), a standard means that military commands—who are the ultimate users of the equipment purchased by the parent service—use to convey to industry what they would like potential competitive manufacturers to design and build. The first ORD drafted was for an Air Force program known as the Primary Aircraft Training System (PATS), the service's fallback program to replace the defunct T-46.[528] The sleight of hand that turned PATS into JPATS was making the ORD a document that enjoyed the full institutional buy-in of both the Air Force and the Navy. Once the ORD existed with joint sanction, several years of difficult procurement work remained, but the program would succeed or fail from that point forward as a bi-service entity.

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[528] The JPATS story is full of interesting naming and acronym stories. To wit, the name PATS seems straightforward, but is a subtle nod to Colonel Pat Flanigan, a "mercurial" figure in the ATC planning directorate; "'Heterogenius' Engineering and JPATS," 268. By 1991, with an agreement signed by the Navy in hand, the services "firmly welded a 'J'" onto an acronym that remained fairly mellifluous by military standards, but paid homage to the all-important 'joint' aspect that Congress had directed; ibid. The Navy seems to have fared rather less well in its initial naming of programs. When first considering how it might participate in the SUPT concept, action officers named its concept trainer the Primary Naval Aviation Training System. The pronunciation of the resultant PNATS acronym resulted in "lots of ribbing" from senior officers at the Naval Air Training Command (CNATRA) and a quick change to NPATS, which paralleled the Air Force construction but also sounded less cartoonish; O'Keefe questionnaire, 5 May 2014. A more disastrous example was a first attempt to re-brand initial navigation training. An unfortunate and poorly considered combination of 'undergraduate,' 'combined,' 'training,' and 'navigation' did not see the light of day as an acronym, but did get its originators thrown out of an early briefing with direction to try again; Raymond "Doc" O'Keefe (Raytheon Aircraft Corporation; former naval aviator, instructor pilot, and CNATRA standardization-evaluation examiner; former Navy JPATS requirements officer), telephonic interview with the author, 6 May 2014.

The ORD was not the first step, though, because for the program to be truly joint meant that identical ORDs had to issue from the two involved services at essentially the same time.[529] The means used to attain coordination was a comprehensive plan for all military aviation training. The Air Force, putting to use some insight its leaders had gained fighting other Pentagon political battles, assigned some of its best and most motivated people to draft and incubate a series of so-called aviation 'masterplans.' These comprehensive plans, originating as Air Force-specific documents, came to encompass other services' roles in aviation training as well, and after some savvy socialization in the upper echelon of the defense establishment, came to comprise the 'DoD' plan for creating new pilots and navigators for military flight. After the master plan was imbued with, in the colorful parlance of the military, joint 'stink,' it became the basis for a 1990 joint statement of operational need (JSON) for a common primary trainer. Further details about the origin of these master plans are in order, because they lie as a pearl at the center of the collaborative effort that put a 'J' on JPATS.

When then-Brigadier General Robert Delligatti departed Washington, DC for Randolph Air Force Base near San Antonio, Texas to lead the plans and programs directorate of ATC (ATC/XP), he left with a personal mandate from the serving Air Force Chief of Staff, General Larry Welch. Welch told him not to rush back into restarting the T-46 program, but rather to take a look around him and see what changes were required to get back on track. His only specific guidance, according to retired Lieutenant General Tome Walters, was direction to avoid 'wide-

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[529] Reinforcing the dissociative forces that act on 'joint' acquisition, it is worth noting that the services are the sole procurers of the equipment they will use, even in something as conspicuously cooperative as the JPATS. Congress has never interfered with the "train, organize, and equip" role of the military services, even when considering major reforms. Thus, the Air Force, while designated the 'lead service' for the effort, was only contracting for aircraft and ground support for which it would be responsible; the Navy was doing the same. The realization that one service can pull out at any time affected the program, but the influence of Congress to force services to honor past commitments helps to counter this tendency.

body' trainers.[530] Delligatti's first actions, therefore, involved building up the requirements

division, which had proven inadequate in reining in creeping requirements for the T-46

program.[531] He brought together a larger, but closely-knit, team of handpicked officers to staff

XP, filling it with people who had good analytical skills. He also deliberately searched for

previous planning and programming experience from the Pentagon, finding in Walters someone

who could turn the vision of a joint trainer into an actual line item in the Program Objective

Memorandum (POM), an service-specific document that, barring exogenous input, often

translates into future budget dollars. Delligatti's team first focused on examining the entire

process of pilot training, throwing out all assumptions and examining the aircraft involved in the

process. A series of studies led to the conclusion that the T-37 "was not the long pole in the tent;"

rather, the Air Force "was flying the wheels off the T-38," and would require a replacement for

that aircraft first if it did not return to its historical roots and adopt a specialized pilot training

system.[532]

To capture the imperative of specialized pilot training and the acquisitions required to

enable it, the planners drafted and published a trainer aircraft master plan. Colonel Willard

Grosvenor, a plans-and-analysis expert who had previously distinguished himself in the

Pentagon, led the drafting of the 1988 version, which was an internal ATC plan. This document

proved so useful that its subsequent iterations, via inter-service coordination, DoD socialization,

and congressional promotion, grew 'joint legs.' The inspiration for that jointness lay in SUPT, as

discussed earlier. Specialized pilot training meant that the Air Force's training system would

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[530] Walters interview, 28 April 2014.
[531] Walters relayed that the plans and requirements directorate (ATC/XP) had only eight people, and that its method of relaying requirements to the T-46 program office was "to staple together whatever the [Director of Operations] DO or Logistics shops sent their way and mail it off to Wright-Patterson [the location of the SPO]," which allowed requirements, and costs with them, to grow unchecked. One egregious example: the single-engine climb rate specified for the T-46 was higher than that of an F-15, a large tactical fighter; ibid.
[532] Ibid.

more closely resemble that of the Navy. This fact led to realization that joint procurement of the primary training vehicle was also possible, and that naval representation needed to enter the process without delay.

Participants in this era were all quick to mention they were part of a great team, and that a monopoly on great ideas did not reside in one mind. The notion to add the appeal of jointness to what was then the Air Force PATS thus gets widely distributed, but Colonel Stephen Chiabotti receives undisputed credit as the person who authored a 1989 version of the trainer aircraft master plan that captured the concept. Giving Delligatti's idea additional momentum and building on the 1988 master plan, then-Brigadier General Walter Kross brought to JPATS his experience in writing master plans to take control of large programs that were foundering in the Pentagon, using them to focus interested audiences toward forward progress.[533] Kross, who retired in 1998 as a general in command of the U.S. Transportation Command, further fanned a flame of jointness, exhorting his Air Force subordinates working on JPATS to "cloak ourselves in the mantle of jointness."[534] He believed strongly in the benefits of cooperative training and acquisition, and urged many of the more significant compromises that kept the JPATS trainer appealing to Navy sensibilities.[535]

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[533] Kross interview, 1 May 2014. Delligatti was first to ATC, arriving in 1987 as the XP, later becoming the vice commander and remaining at Randolph Air Force Base until 1991. He hired Walters, who was the director of requirements from 1989 to 1991. He worked for Kross, who directed plans and requirements at ATC from October 1988 through May 1990; see "U.S. Air Force Biography of Major General (ret.) Robert S. Delligatti," Department of the Air Force, accessed 31 May 2014,
http://www.af.mil/AboutUs/Biographies/Display/tabid/225/Article/107260/major-general-robert-s-delligatti.aspx; "U.S. Air Force Biography of Lieutenant General (ret.) Tome H. Walters," Department of the Air Force, accessed 26 April 2014,
http://web.archive.org/web/20040505112517/http://www.af.mil/bios/bio_print.asp?bioID=7506&page=1; "U.S. Air Force Biography of General (ret.) Walter Kross," Department of the Air Force, accessed 26 April 2014.
[534] See Chiabotti, "'Heterogenius' Engineering and JPATS," 268.
[535] Kross reflected that after he went through the so-called "Capstone" training for new flag officers, "jointness was in my DNA, and I really lived that out in a very sincere way, a lot more than others who actually did go through the program, who seemed to hold their breath and it didn't 'take.' But it certainly took with me, because I really liked the whole concept of it;" Kross interview, 1 May 2014.

With the master-plan construct enriched by several ATC-commissioned studies, it gained momentum within both services. Having a focal point for the new direction being pursued for military aviation training for the Air Force and Navy, the 'routine' work of aircraft acquisition could begin again. The first formal acquisition document required by the conventions of the day was a statement of need (SON), an acknowledgment that the government sought to purchase a new aircraft. To inform the SON, the military services, at first led by Air Force representatives from ATC and the trainer Special Program Office (SPO), gathered information via a solicitation for information, wherein potential competitors for the JPATS contract provided details about the aircraft they produced.[536] Fortunate members of ATC had a heyday flying dozens of candidate aircraft that hopeful competitors made available to them—an enjoyable task, but also critical to a non-developmental program. As Walters put it, "We were always writing requirements with one eye on 'What do we need?' and one eye on 'What can the market deliver?'" Table 1 includes a partial listing of these aircraft with some notes relevant to their performance in the search for the JPATS trainer.[537, 538, 539]

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[536] Manning et al., *History of the Air Training Command 1991*, 1—Narrative, 222. SPOs for weapons systems do not reside in the major command that will use the equipment being purchased. Instead, they are entities within a separate command that is charged with development and procurement. At the time, the Air Force Systems Command (AFSC) handled this function. Rick Sladek, who figures prominently in this narrative, was a 'SysRep' liaison from AFSC to ATC before he was transferred permanently to ATC to oversee the program; Sladek interview, 13 May 2014.

[537] Chart is based on William D. Siuru, Jr., "JPATS: Finally a new primary trainer," *Marine Corps Gazette* 78, no. 5 (1994): 68-70. Additional notes are from Emmons, *JPATS and the T-6A*, 29.

[538] The first seven competitors listed were those still participating as of 1994; stepped-tandem seating was a requirement after 1990. For all major requirements, which these seven competitors all met or "planned," see Briefing slides: Joint Trainer Masterplan Update; SD V-23; ATC Periodic History; K220.01 V.17; IRIS No. 01115057; Air Force Historical Research Agency, Maxwell AFB AL, slide 23. (The Cessna entry was not conceived at this point and does not appear in this slide deck.)

[539] Cessna's late entry was facilitated by a congressional requirement mandating seventy-five percent minimum domestic manufacturing content as well as anthropometric requirements added later in the process; see "Cessna All-Out to Complete JPATS," *Flight International*, 23-29 June 1993, 40. The initial JPATS requirement had been for seventy percent domestic production; see *JPATS and the T-6A*, 29. Accommodation of a sitting height range from 32.8 to 34.0 inches put "no impact" on the entries of Cessna, Rockwell, and Vought, while it caused Grumman, Beechcraft, and Northrop to redesign the control system, control stick, and rudder pedals of their respective entries; AETC memoranda: JPATS Cockpit Accommodation—Anthropometry and JPATS ORD II; SD V-36; K220-01 V17; IRIS No. 01115057; Air Force Historical Research Agency, Maxwell Air Force Base AL, 1.

JPATS Candidate Aircraft and Selected Specifications				
Aircraft	U.S. partner/ Foreign manufacturer	Engine/ Manufacturer	Seating/ propulsion	Other notes
PC-9 *Mk II* (winner)	Raytheon/ Pilatus (Switzerland)	PT6A-68/Pratt & Whitney (P&W)	Tandem/turboprop	Required control stick anthropometric adjustment; partnered w/Beech
MB-339A *T-Bird II*	Lockheed/ Aermacchi (Italy)	RB582/Rolls-Royce	Tandem/turbojet	485-knot max speed, well over 250 (+20 dash) requirement[540]
CitationJet (Citation X)	Cessna/N.A.	FJ44 (F129)/ Williams-Rolls	Tandem/turbofan	Based on Citation X, 311-mph max speed;[541] late start for initial fly-off
SIAI Marchetti S.211	Grumman/Agusta (Italy)	JT15D-5C/P&W	Tandem/turbofan	Engine compatibility with T-1 trainer; control system redesigned
IA-63 *Pampa*	Vought/ FMA (Argentina)	TFE 731-2/Allied Signal	Tandem/turbofan	Competed as the *Pampa 2000*; disqualified for spin test[542]
FanRanger	Rockwell/ MBB (Germany)	JT15D-4/P&W	Tandem/turbofan	Competed as the *Ranger 2000*
Super Tucano	Northrop/ Embraer (Brazil)	PT6A-68/ P&W	Tandem/turboprop	Rudder pedal redesign for anthro. req., aka Tucano 312H
T1 *Hawk*	None/ British Aerospace	Various/Rolls-Royce	Tandem/turbofan	Flown by ATC representatives in 1988 [Navy's T-45 *Goshawk* is a derivative]
C-10 *Aviojet*	None/ CASA (Spain)	TFE 731-5/Allied Signal	Tandem/turbofan	Flown by ATC representatives in 1988
F.1300 *Squalus*	None/ Promavia Jet (Belgium)	TFE 109-3/ Garrett[543]	Side-side/turbofan	Reviewed by ATC representatives in 1988
G-4 *Super Galeb*	None/ SOKO (Yugoslavia)	Viper 632-6/Rolls-Royce	Tandem/turbofan	Flown by ATC representatives in 1990[544]

Table 4.1 Partial List of JPATS Aircraft Candidates

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[540] *Jane's All the World's Aircraft 1980-81*, (London: Jane's Publishing, 1981), 119-20.

[541] Michael J.H. Taylor, *Brassey's World Aircraft & Systems Directory* (London: Brassey's, 1996), 128.

[542] Testers dismissed Northrop Grumman's Pampa 2000 entry from the competition in the fall of 1994 because its spin and spin recovery flight characteristics were too dangerous for primary training; see David A. Fulghum, "Spin Problems Narrow JPATS Field to Six," *Aviation Week & Space Technology* 142, no. 1 (1995): 20-23.

[543] Same Arizona-built engine that powered the T-46

[544] Emmons, *JPATS and the T-6A*, 12.

One of the first joint aspects of the program was the means by which the services gathered information for their respective SONs. The action officers evaluating the realms of possibility did not conduct independent observations and then attempt to reach agreement in occasional teleconferences or summits. To the contrary, the Navy officers detailed to monitor the work the Air Force was doing in researching its options for the PATS became *de facto* members of a team that shared workload and opinions among itself. In 1989, for example, ATC sent a team to Europe to evaluate five possible JPATS candidates. Led by the affable Delligatti, the group also included Captain LynnAnne Merten (the first (J)PATS program manager) and Lieutenant Commander Clay Umbach, who represented CNATRA.[545] The shared perspective and information allowed the quick release of a JSON that, along with an Air Force program-management directive (PMD) directing ATC to work with the Navy, conveyed to industry and Congress the seriousness of the two services' intent to cooperate.[546]

The next document to follow the JSON was a statement of operational need (SORD), which for JPATS was intended to be a 'J'SORD, and was ultimately approved at a trainer aircraft requirements summit on 18 October 1991, a meeting attended by the Air Force Chief of Staff, General Merrill McPeak, and the Vice Chief of Naval Operations, Admiral Jerome Johnson.[547] The services intentionally updated the JSORD on 3 Apr 1992; they had agreed to put out regular refinements until the request for proposal (RFP) release marked the beginning of industrial competition in earnest. The JSORD changed according to shifting projections of pilot training need (the early 1990s were a period of general military contraction, which reduced the

[545] Thomas A. Manning et al., *History of the Air Training Command 1989*, ed. Thomas A. Manning, vol. 1—Narrative, (Randolph Air Force Base TX: History and Research Office, ATC, 1990), 129.

[546] The JSON issued on 14 September 1990; see Thomas A. Manning et al., *History of the Air Training Command 1990*, ed. Thomas A. Manning, vol. 1—Narrative, (Randolph Air Force Base TX: History and Research Office, ATC, 1991), 242.

[547] The Navy's equivalent of the Air Force SORD is a Tentative Operational Requirement (TOR), which the Navy issued on 24 August 1990 with an eye to marrying up the service's specifications in the form of a JSORD later that year; ibid.

projected JPATS buy), and also reflected the impact of a significant 1992 DoD change to acquisition strategy, which is discussed later in this chapter. The original goal for RFP release had been April 1993, but it was delayed until May 1994, mostly due to the changes imposed by DoD in 1992 and questions about the aircraft's ability to accommodate women, another topic discussed in depth later in this chapter.

Alterations to the JSORD and other documents associated with the program, significant as they were, never came close to impacting its joint quality. This was sealed during the process that defined requirements, which is on the record as one of the most thoroughly vetted joint discussions in the history of the Pentagon. As Walters phrased it, "Why was the program successful? Because the requirements were scrubbed, scrubbed, scrubbed, and scrubbed. We had thought deeply and long and hard about each requirement."[548] After the RFP was issued, a gag order kept service officials from discussing competitive issues with aircraft manufacturers that were vying for the contract. A fly-off evaluation led to a 22 June 1995 selection announcement by Secretary of the Air Force Sheila Widnall and Chief of Staff Ronald Fogleman, which named the Raytheon-Beechcraft PC-9 derivative as the "best value to the government" and the winner.[549] A summer and fall's worth of bitter protests followed, but after a Government Accountability Office (GAO) ruling rejected the protests, an official contract award happened on

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[548] Walters describes a marathon vetting process, including briefing the requirements and risks to a series of O-6 (Air Force Colonel and Navy Captain), one-star, two-star, and three-star officer panels at the Pentagon. Participating ATC personnel involved could "write a PhD dissertation on each requirement." Mid-effort, the Air Force, which had gone through several failed acquisitions processes, completely revamped the process. It re-wrote its regulations, stood up another oversight division on the Air Staff, and forced all programs to re-write requirements, which "added another year" to the time required to approve JPATS requirements. In essence, the Air Force and Navy re-vetted the requirements they had already agreed upon via a formal board process. Everything required an explanation and an analysis as to why it was a requirement and not just a desire. A typical summit would involve a full eight-hour day in the Pentagon. Walters briefed requirements and his SPO counterpart would brief risks. The Navy, unaccustomed to such rigor, was along for the ride. "The Navy endured the summit process more than they enjoyed it. But they did feel like they were treated like a respected partner;" Walters interview, 28 April 2014.

[549] Joint briefing: JPATS prime contractor announcement; 168.7677-203; IRIS No. 01174924; Air Force Historical Research Agency, Maxwell AFB AL, press conference transcript page 2. See also Matt Carroll, "Raytheon Wins Contract for Planes," *The Boston Globe*, 23 June 1995, 85.

1 February 1996, delaying but not changing the original decision. Touched by services' training commands and their associated SPOs, the Congress, DoD and its staff, legislation, regulations, and industry protests, the joint requirements finalized in 1991 never showed a sign of wavering.

What was the source of all the jointness at the heart of these documents? Who arranged the dialogues that birthed them? A good bit of it came from military officers who believed in jointness for its own sake. Walter Kross, who as a brigadier general led the planning and requirements division of ATC, by his own description "preached jointness," having been convinced at the training he received in preparation to be a flag officer that jointness was worth pursuing for its own sake.[550] Although he was modest in a personal interview that "all the decisions to be joint had been made at that point," from others interviewed on the topic he receives widespread acclaim for imbuing the program with the joint angle it developed during the late 1980s.[551] He also helped hone the master-plan effort that became one of the more effective mechanisms for ensuring JPATS developed and sustained its cooperative inertia.[552] The team effort created an unimpeachable Air Force plan that grew to become a DoD plan, and then it co-opted the highest available level of exogenous support from the Congress.

Another benefit of the master-plan construct, with its thirty-year time horizon, was the leverage it gave programmers and planners to argue for long-term budget decisions. It is sometimes difficult to get past the immediate cost savings that program cancellations inevitably bring; defense appropriations nominally happen according to five-year plans, but Congress usually authorizes funds for a maximum of two years and, to maximize its control and oversight,

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[550] Kross interview, 1 May 2014.
[551] Ibid.
[552] Kross: "It turned out that the idea of a master plan was a particularly good one, because people are always looking for a master plan. And if there isn't one, you readily fill this vacuum, this void, and you are widely accepted, because people like to have a plan to shoot at or a plan to embrace. And along the way, it gives them something to touch and shape, so that they can more fully embrace it;" ibid.

usually appropriates spending on a short, one-year leash. In fighting to keep the T-1 procurement alive when it faced cancellation in the fall of 1990, ATC leaders were able to point out the multi-billion dollar expense that would result in canceling a then-$910 million purchase for a short-term gain.[553] The master plan facilitated similar long-term arguments about operating and acquisition costs for the JPATS, again giving the Air Force some intellectual maneuvering space as it argued its case against impatient keepers of the budget.

Description of the acquisition process has concentrated on the aircraft, but the word 'system' included in JPATS alludes to the comprehensive nature of the training services the winning contractor would arrange. JPATS includes "not only the aircraft, but also a ground-based training system and an integrated logistics support for day-to-day maintenance. The training system includes flight simulators, cockpit-procedure trainers, courseware, syllabuses, technical data, computer-based training, and so forth… Integrated logistics support means civilian-contracted ground crews…provide maintenance."[554] The original contract award stipulated that the winning aircraft supplier could not supply the integrated program for simulation and flight-training pedagogy centered around its airframe, and that it must conduct a competition among separate contractors for that portion.[555] This grew to become a contentious matter later in the process, a topic that this chapter's later discussion of DoD involvement tackles.

Perhaps the biggest benefit of the master-plan concept was the easily digested package it provided to JPATS advocates in which to carry their ideas to Congress. Helpful staffers taught the Air Force and Navy AOs to socialize their intent and plans among the four congressional

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[553] Emmons, *SUPT and TTTS*, 57.

[554] Siuru, "JPATS: Finally a new primary trainer," 69.

[555] "Spring Takeoff for JPATS Ground System," *Sea Power* 40, no. 2 (1997): 14-15. The routine nature of pilot training missions makes them ideal for simulation, as representative terrain databases do not need to be constantly updated to reflect real-world situations and threats (other than weather); Harold Kennedy, "'War in a Box' Not Real Enough for Air Force Combat Training," *National Defense*, November 1999, 30.

committees—the Senate Armed Services Committee (SASC), the House Armed Services Committee (HASC), the Senate Appropriations Subcommittee on Defense (SAC-D), and its cousin in the House (HAC-D)—that have the most impact on military funding.[556] Skip Ringo served as a professional, full-time staffer on the SASC. A former Marine, he "was a friend at court" who coached the JPATS team that Congress' mood was right to see the good in joint programs, and that by engaging in the politics of the day the services could gain support for their acquisition initiatives.[557] In Walter's witty turn of phrase, highlighting the joint aspects of the program to Congress "was just apple-hood, mother-pie, and baseball," a favorable alignment with political sensibilities that pleased legislators and ensured that there "were no natural predators for this program."[558]

Fighting to the Point of Cooperation
Although the services relatively easily garnered exogenous support, there were roadblocks along the path to making the compromises required to have a viable JPATS trainer. As participants in the process recall it, the biggest technical specifications to be resolved in arriving at the JPATS requirements were the propulsion system and the seating arrangement. As discussed in the description of the process that formulated the JSON, one of the things that facilitated critical compromise in these and other areas was a near-constant participation of representatives from both services. This lubricated jointness, but it had even more effect in addressing some

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[556] Walters recalled that, with regard to its priorities for influencing Congress, "[t]he Air Force didn't give a hoot about this primary trainer program. Whatever their top ten priorities were, we didn't come close to making it. They weren't going to spend any time and energy on the Hill at the beginning of the program." This turned out to be a mixed blessing, as the lack of attention caused the JPATS team to seek permission from the Air Force Office of Legislative Liaison (SAF/LL) to form their own congressional advocacy cell that carried on an effective engagement strategy on Capitol Hill; Walters interview, 28 April 2014. Chiabotti recalled that although the initial cadre of JPATS senior leadership recognized the value of this pursuit, it became harder to convince subsequent replacements; Chiabotti e-mail, 6 June 2014.

[557] Chiabotti e-mail, 6 June 2014.

[558] The people most involved with the program for the Air Force ended up "running our own congressional advocacy campaign." Walter recalled that in about three days time, he, Chiabotti, and Delligatti "hit fifteen to twenty offices," talking to "a whole bunch of key Congressmen;" Walters interview, 28 April 2014.

significant intra-service issues inside the Air Force. Most participants recall that the biggest

battles were within the Air Force, and most of these were specifically disputes among parts of

the ATC headquarters staff. Had they not been settled in a way that met basic Navy preferences,

though, they would have probably scuttled the chances for joint cooperation, which means that

the intra-service issues were in fact joint issues.

Many of the obstacles that required attention were at their root simple matters of preference.

The Air Force had developed a tradition of flying trainers with two jet engines, a convention that

the ATC Operations Directorate (DO) guarded jealously. Walters recounted a story about Kross

getting "ambushed" by an ambitious DO Colonel at one of his first meetings with the sitting

ATC Commander, Lieutenant General Robert Oaks, over the issue of dual engines.[559] Jet

preference could also be expressed in terms of airspeed, another tactic used by the DO's 'jet-

trainer mafia.' O'Keefe, who was detailed from the Navy as a long-time participant in the

process at ATC recalled "an Air Force Colonel asking, 'What is the top speed for any of the

turbo-props?' His subsequent direction was to 'add thirty knots' to that speed as the aircraft

requirement."[560] Normally a question about aircraft speed is a reasonable one to ask about

trainers; young minds have to be trained to make decisions about 'airmanship'—a catch-all term

that balances prioritization of safety concerns, procedural rules, and mission accomplishment—

while flying at a certain pace. A 100-knot crop duster that flies low and can turn in a matter of

yards does not create the same decision-making challenges as a jet that cruises at 300 knots and

whose turn radius is measured in miles.

However, to structure a requirement deliberately as a function of what a given propulsion

system could or could not do, at least in a primary trainer, was disingenuous and demonstrated

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[559] The attacking Colonel posited the "need" for two engines in dire terms, arguing passionately that "people will die" if the requirements allowed single-engine aircraft to compete; ibid.

[560] O'Keefe questionnaire, 5 May 2014.

institutional preference for an old habit. It was up to the true believers in jointness to hold the line and insist that the ORD be based on genuine training need, not mere desires that drove a specific kind of equipment. Walters helped Kross out of the verbal trap set for him by holding forth on the realistic state of the art in engine technology and diagnostics, one battle in a campaign of arguing against the ATC DO that would mark his tenure at ATC.[561] Observers of the process, as well as the ATC official history, cite Major General Delligatti, who advanced from XP to become the ATC Vice Commander, as the lead purveyor of direction to keep requirements general enough to allow adequate primary flight training—not to drive a certain type of airframe or propulsion method.

The open-ended approach toward requirements that Delligatti imparted to his XP team won the day and kept the possibility of joint cooperation alive.[562] The mantra "we don't care what moves the air over the wings, so long as it moves it" became a philosophical basis for the ORD and follow-on acquisition documents, specifically referring to an agnostic approach to JPATS propulsion, but more broadly reflecting a spirit of compromise that would make joint effort possible.[563] Media reports picked up on this tone, noting that the Air Force had lead responsibility for procurement of JPATS, but that evidence of joint accommodation was apparent. Articles that mentioned naval training traditions allowed that the Air Force remained open to the

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[561] Walters, who had recently worked on efforts to re-engine the Air Force's tanker fleet, was familiar with modern engine reliability and diagnostics, and knew that a single-engine airplane would have an unanticipated catastrophic failure only rarely. Pointing this out disarmed the DO argument over dual engines and caused a shift of political influence in ATC that favored XP; Walters interview, 28 April 2014.

[562] Emmons, *JPATS and the T-6A*, 17. O'Keefe also recalled that ATC (later AETC) commander General Henry Viccellio, Jr., adopted much the same attitude when he replaced General Ashy in 1992; O'Keefe interview, 6 May 2014.

[563] Chiabotti attributes the quotation to Major General Larry Henry, who had replaced Kross as the ATC/XP; Chiabotti e-mail, 6 June 2014.

concept of a propeller-driven aircraft even if it had been "historically less apt to choose a turboprop trainer."[564]

Performance-based requirements also kept the program in line with emerging contracting laws and rules. Ongoing acquisition reforms directed requirement writers to phrase specifications that did not make arbitrary limitations on *how* contractors met the training objectives of the new aircraft. Areas that received emphasis were minimum speed (240 mph), flight deck size (accommodating individuals ranging from 5' to 6'4" and 116 to 250 pounds), resistance to bird strikes (absorbing a strike from a four-pound bird at 270 knots), spin training, ejection seats (allowing safe ejection at ground level with no forward velocity), and cockpit pressurization.[565] The simplified requirements also put the Air Force more in line with the Navy, which was accustomed to writing a broad specification and receiving the bulk of suggestions as input from interested contractors.[566]

Even though Air Force students were then flying the *Tweet*, reporters writing about the replacement program recognized that ATC supervisors were giving clear signals that a jet was not a foregone conclusion, and that there would be room in the competition to consider the benefits of the ruggedness and reliability of turboprop aircraft.[567] This approach in the end settled the matter of propulsion systems and overcame the Air Force's predilection to use turbojets for

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[564] David M. North, "Power Tucano H Handles Well at High, Low Altitudes," *Aviation Week & Space Technology* 136, no. 16 (1992): 46-47.

[565] Hakki Aris, "A Programme for Success," *NATO's Nations and Partners for Peace*, Fall 2003, 148.

[566] At the time, the requirements cultures of the Navy and the Air Force were quite far apart. Chief Master Sergeant Robert Laymon, who worked on the JPATS program as a logistics expert, contrasted the Air Force's "little old ladies in red tennis shoes" and "SPOviets" who dictated every specification in a document that ran to hundreds of pages with the Navy's habit of writing a "five-page specification" and seeing what interested contractors could deliver; Robert "Bob" Laymon (Chief Master Sergeant (ret.), USAF; former Acquistion Logistics Superintendent, T-46 Next Generation Trainer (1983-1986); former Acquisition Logistics Superintendent of Logistics, T-1 Tanker-Transport Training System & T-6 JPATS, Air Training Command Headquarters (1986-1990); former SW Regional Manager, Beechcraft & L-3 (1990-2008)), personal interview with the author, 2014.

[567] See David A. Fulghum, "Lack of Firm Requirements, Force Reductions Raise JPATS Questions," *Aviation Week & Space Technology* 135, no. 9 (1991): 66-67; Bill Sweetman, "Northrop Grumman Back from the Brink," *Interavia* 55, no. 645 (2000): 18-19.

trainers. If an airplane does not have to go 400 knots to meet its training mission, it becomes very difficult to argue with the low costs associated with a turboprop—it is cheaper to buy outright and sips about half of the fuel of a jet for equivalent flight time.

While the Air Force benefited from the knowledge it gained by flying prospective aircraft and gathering information from manufacturers, the more earnest competitors worked to gain an edge as well. For example, after several demonstrations of the PC-9 to the Air Force, Raytheon placed additional emphasis on making its updated version easier to maintain, adding flight line-replaceable 'black boxes' for high-failure avionics components, and making sure that all routinely serviced components were accessible from the same side of the airplane.[568] Both measures reduce average maintenance man-hours per flight hour, which is an important logistics requirement for competitively bid military aircraft.

The other serious area of contention was the airplane's seating arrangement. During the long reign of the T-37, Air Force primary training had occurred in a side-by-side seating arrangement, the instructor to the right of the student, where she was able to monitor every movement of eyes, hands, and feet—and intervene immediately with auditory (a comment or question on the intercom) or tactile (a rap on the head or pinching off the flow of the student's oxygen hose) inputs. The Navy had trained in tandem in the T-34, the instructor sitting behind and above the student, able to monitor only the back of the student's head and interact solely via the intercom. Tandem seating gives the student pilot and her instructor roughly the same visual references, facilitating the tactile-descriptive knowledge transfer that typifies pilot training. In a side-by-side trainer, the instructor has to adjust for the fact that his student's view is on a different hemisphere of the cockpit, which makes flying left- and right-handed versions of various maneuvers relevant—and increases the time it takes to produce a proficient student.

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[568] Aris, "A Programme for Success," 149.

Finally, a tandem cockpit seems to convey a sense of early pilot-in-command responsibility to students. Without body language from an instructor influencing their decisions, students 'own' their environment earlier, breeding the confidence desired for military airmanship.[569]

Before it was put to rest, the issue became a matter of inter-service dispute with a fair amount of theatrical flair. Then-Lieutenant Commander O'Keefe described a showdown at Randolph Air Force Base in the ATC headquarters conference room between his fellow Navy liaison Clay Umbach and ATC Commander General Joseph Ashy. "At an early planning meeting," Umbach interrupted Ashy when he briefed a 'requirement' for side-by-side seating. After Ashy ignored his first comment, Umbach stood and said, "'General…as the senior Naval officer present, I must protest. The Navy requires tandem seating and without that requirement, the Navy will not participate in this acquisition.'"[570] According to O'Keefe, "You could have heard a pin drop," so out of routine was if for a junior officer to not only interrupt a four-star general (especially one as notoriously volatile as Ashy), but also to defy his instructions.[571] Umbach had direction from his flag-officer supervision at CNATRA to stand firm on the seating issue, which likely enhanced his own bravado. Palpable tension built in the room—at least among the uninitiated—as the exchange unfolded, then vented away just as quickly when a smile crept across Ashy's face and he said, "I always knew I liked you, Clay."[572]

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[569] The joint memorandum agreeing to tandem seating cited "symmetric flight references, wider field of view, lower relative form drag [gracious language to say that heads are narrower than buttocks], similarity to high-performance cockpits, and *increased perception of independence*" as the reasons for the requirement; see Manning et al., *History of the Air Training Command 1989*, 1—Narrative, 129. Then-Brigadier General Walter Kross (serving as the chief of plans and requirements for ATC), Rear Admiral Jimmie Taylor (the Navy's chief of air training), and Rear Admiral Jon Coleman (directing aviation, manpower, and training for the Navy in the Pentagon) signed the joint memorandum of understanding in December 1989; Memorandum of Agreement between the Department of the Navy and the Department of the Air Force; SD III-56; ATC Periodic History; K220.01 V.12; IRIS No. 1099042; Air Force Historical Research Agency, Maxwell AFB AL.

[570] O'Keefe interview, 6 May 2014.

[571] O'Keefe questionnaire, 5 May 2014.

[572] O'Keefe interview, 6 May 2014. O'Keefe posited that Ashy and Umbach's common heritage as graduates of Texas A&M University may have fueled the latter's bravado. Another source, wishing to remain anonymous on the point, suggested that Ashy might have asked Umbach to stage the episode to help him maneuver around a politically

Ashy's showy acquiescence was not as significant a surrender as it might have seemed to someone sitting outside the 'horseshoe' of seats around the big conference table in Building 900 at Randolph Air Force Base, though it typified the dramatic flair for which subordinates remember him.[573] The Air Force had, via another acquisition program, effectively rendered the need for side-by-side seating a dead issue. The 1988 ATC trainer master plan, along with subsequent iterations, defined a need to evolve to an enhanced flight screening (EFS) process, a brief pre-pilot-training program that all Air Force students would attend as a precondition to flying the JPATS.[574] The requirements for that aircraft, which, during its short half-life as an Air Force-run program was the Slingsby T-3 *Firefly*, specified a side-by-side seating configuration.[575] With the Air Force's desire to monitor student eye movements and have the advantage of immediate attention-getting non-verbal communication in its very first training cockpit, the lead service was able to give the Navy yet another preference that kept it gamely

difficult decision with joint assistance. Sadly, the late Commander Umbach is not available to corroborate either way, but this investigation reveals that at least most of the inter-service arguments over JPATS requirements were real, heart-felt, and seldom staged. Whether Umbach's opponent in the room that day was Ashy or not, parts of the Air Force and the Navy did disagree on the seating issue and had to bring it to a satisfactory resolution if joint participation was going to proceed.

[573] General Ashy was known to yell at underlings of all ranks, although standing up to a "flaming" could earn one his undying respect; Walters interview, 28 April 2014. His handwritten notes on subordinates' staff work shows a near-dictatorial style, unimpeded by restraint in his criticism, a tendency to imply disloyalty, and a threatening tone. A sample: "Telling me I'm wrong without evidence won't get you far." Subordinates do concede, however, that Ashy's style was tempered by genuine contrition and mutual respect on occasions when one had the courage to demonstrate steadfast competence in the face of his temper; 3.

[574] The flight-screening program the Air Force ran at the time took place mostly in the T-41, a variant of the Cessna 172, which is a high-winged, reciprocating propeller aircraft with side-by-side seating. The T-41 was capable of neither aerobatic flight nor overhead landing patterns, both of which the Air Force wanted to train and evaluate prior to sending students to pilot training. When an audit later faulted the Air Force for proceeding to buy EFS aircraft without a formal cost and operational effectiveness analysis, the service rather easily rebutted the findings by noting that it had gone through a formal acquisition approval process and by showing how much money EFS saved by reducing student attrition from the comparatively more expensive primary training; Thomas A. Manning et al., *History of the Air Training Command 1 January 1992 - 30 June 1993*, ed. Thomas A. Manning, vol. 1—Narrative, (Randolph Air Force Base TX: History and Research Office, ATC, 1993), 155. The Navy did not conduct any kind of flight screening, and had higher attrition rates in primary flight school; Chiabotti e-mail, 6 June 2014.

[575] A series of high-profile crashes at the Air Force Academy caused the grounding of the T-3 and the evolution of flight screening to a contractor-run program employing the (side-by-side) Diamond DA-20. Debate continues to this day about whether the T-3 fatalities were primarily due to aircraft defects or students and instructors putting in erroneous control inputs that exacerbated spins and other dangerous situations. See, e.g., Mark Thompson, "The Deadly Trainer," *Time*, 12 January 1998, 42-43; Suzann Chapman, "Aerospace World: Crash Investigations Complete," *Air Force Magazine* 80, no. 2.

marching in step toward a set of mutually satisfactory requirements.[576] Aside from being a picture of the highly dramatized meetings that characterized JPATS' long march to becoming a program of record, the cockpit configuration issue is representative of a host of other issues involving service preferences or long-held habits that *could* have derailed the project's joint essence but did not.[577]

An overarching concern about cost provided a subtext to all dialogue as well. Contrary to some Air Force perceptions that pegged the Navy with apathy toward the program, senior Navy officials were concerned about expense. O'Keefe shared that the "direction I was receiving from CNATRA Senior Staff was to 'keep the AF in check so they don't buy something we can't afford,'" as the T-34 was "already an acceptable trainer."[578] The Navy was in the middle of its own acquisition process to require a new advanced trainer, the T-45 *Goshawk*. While the T-45 was not the abortive disaster that the T-46 had proven to be, the Navy was still dismayed to see its procurements cost spiral up as "unchecked requirements" and complex modifications to make the airplane carrier-worthy piled on to the program.[579]

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[576] The unfortunate fatalities associated with the T-3

[577] According to Walters, Welch's direction to Delligatti had been for "no more wide-body trainers," which would suggest that tandem seating was desired early on in the process; Walters interview, 28 April 2014. Although Welch was retired when the matter was finally settled, this direction suggests that the desire for side-by-side seating originated primarily within ATC, an observation consistent about many of the contentious requirements debates that marked the JPATS. Several documents reviewed demonstrate that the issue remained in debate even after the requirements summit that 'settled' it, but the first ORD made stepped-tandem seating a requirement, listing it as a primary deficiency of the T-37 (which was side-side) and T-34 (which was tandem but not stepped); see Operational Requirements Document (ORD) for the Joint Primary Aircraft Training System (JPATS); SD V-21; ATC Periodic History; K220.01 V.17; IRIS No. 01115057; Air Force Historical Research Agency, Maxwell AFB AL, 4-5.

[578] O'Keefe questionnaire, 5 May 2014.

[579] The characterization of Navy concern over the cost of the T-45 is from Sladek interview, 13 May 2014. An ATC history mentions "some problems with the complex modifications needed to permit the T-45 to operate from carriers" and attendant program delays; Manning et al., *ATC History 1992-1993*, 1—Narrative, 148-49. The unit cost of a T-45 was $17.5M, an F-18C *Hornet* cost $29 million, and the British Aerospace *Hawk*, upon which the T-45 was based, was available at the time for about $6 million; see "U.S. Navy T-45 *Goshawk* Training Aircraft Fact Sheet," U.S. Navy, accessed 29 May 2014, http://www.navy.mil/navydata/fact_display.asp?cid=1100&tid=2000&ct=1; "U.S. Navy F/A-18 *Hornet* Strike Fighter Fact File," U.S. Navy, accessed 29 May 2014, http://www.navy.mil/navydata/fact_display.asp?cid=1100&tid=1200&ct=1. The Air Force lists the unit cost of a T-38 at $756,000 in "constant 1961 dollars," which is $3.4 million in 1991 dollars, a reasonable year of comparison

Amidst the fighting and compromise that marked requirements definition, participants from the Navy sometimes perceived motivations for joint cooperation that were separate from their Air Force colleagues. For example, O'Keefe felt that there was a strong motivation for senior naval officers to direct participation and "flight-following" of the Air Force's primary trainer effort because it would become relevant to the upcoming base realignment and closure process.[580] The Navy's recognition of this facet seems to have been well founded. Later DoD direction regarding joint fixed-wing training programs also included a specific mandate to consider the effect of consolidation on the progress of the 1995 Base Realignment and Closure (BRAC) commission's activities.[581] Since BRAC is politically charged—of late Congress has forbidden it entirely—the DoD direction retained a nexus in a larger arena of congressional attention. What remains intact, though, is the observation that both services' primary source of motivation to act jointly was a result of action from the *legislative branch*, not their own druthers or those of DoD.

The other observation about the totality of the inter-service cooperative effort to define requirements was that it was marked by robust debate—some would even call it fighting—that led to apolitical discussion of the merits of different approaches. Thus, compromise could happen in the conference rooms of the training commands and in the Pentagon, it was not inflicted, piecemeal, on the services, according to the whims of lobbyists. Perhaps one of the greatest gifts Congress gave the services in its firm mandate for aviation-training jointness was the encouragement to argue with one another to the point of creating a solution. The situation is

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for the T-45. (Time-value-of-money calculations are based on the Bureau of Labor Statistic's annual Consumer Price Index.)

[580] O'Keefe interview, 6 May 2014.

[581] A set of briefing slides from Major General Pratt and Rear Admiral William Hayden lays out their tasks to "establish joint training" in accordance with SECDEF guidance and to "provide an *operator's perspective* on training consolidation and base closure" to the BRAC commission; Briefing slides: Joint Fixed-Wing Training; unofficial working papers; SECDEF-DIrected Joint Pilot Training Working Papers; Personal collection of Raymond "Doc" O'Keefe, Universal City, TX, 2-3, emphasis in original.

reminiscent of Eisenhower's tactics in preventing the services from bringing him their political battles after he became President—an understanding that a unified answer was expected kept the pulling and hauling contained in the Pentagon, at least for most issues. While critics of the approach feel it breeds false unanimity and argue it rarely achieves the best defense outcome, there is little doubt that it forces a form of jointness. At times, participants from the Navy even aligned themselves with Air Force factions who were trying to win an intra-service debate. Generally, ATC/XP seems to have coopted naval cooperation against the campaigns of ATC/DO, again exhibiting its overall high level of political sensibility.

All observers consulted allowed that, throughout the process, the Air Force made the most significant concessions. Engines and seating, the two biggest issues, went the Navy's way. To make the comparison feasible and simple enough for bidders to understand, the Air Force also had to abandon its efforts to study training 'footprint,' which denotes the percentage of the pilot-training syllabus a given aircraft can accommodate. A more capable aircraft can take a student further in the program, which offers a way to relieve pressure on follow-on platforms like the then-overtaxed T-38.[582] Giving up its desire to approach the bidding with this form of flexibility was probably necessary anyway, as SPO representatives believed it to be too complex for competitors to grasp—or at least that it would open up the process to interminable protests.[583] To get the Navy onboard, though, the footprint studies were jettisoned early to get the two services' primary training syllabi in lock step for the new trainer competition.

As requirements coalesced, the services laid the groundwork to make the training programs employing the new aircraft joint endeavors as well—perhaps unintentionally. The direct impetus to take this course of action was direction from the Secretary of Defense, who ordered the

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[582] Chiabotti e-mail, 6 June 2014.
[583] Sladek interview, 13 May 2014.

consolidation of fixed-wing primary aircraft training in 1993.[584] The services quickly established

small exchange programs, first mingling instructor pilots before educating each other's students

at the training bases. Even without common aircraft, the initial students and cadre indicated that

the shared training mission was aligned well enough that there were no significant obstacles to

success, though the initial rosy assessments proved to be fleeting.[585]

2. From Requirements to Source Selection
Once the rough requirements existed and had solid acceptance across both services, the

coalescence to a physical system was less complex than the explanation suggested by following

the story of manufacturer competition that evolved in the media, especially in the slew of trade

magazines devoted to the aviation industry. AETC's official history that encompassed 1993

through 1995 waxed petulant about the JPATS, complaining about a confluence of outside

influences. The narrative began with an exasperated, "If it wasn't one thing, it was another," and

compared the program to "a race car with a blowout," noting that it "careened from side to side

as defense officials several times changed the ground rules governing the selection process."[586]

The writer also noted Undersecretary of Defense John Deutch's triad of stipulations that the

aircraft would accommodate eighty percent of eligible women, that the program would

incorporate proposals to reduce acquisition risk and cost, and that contractor recommendations

for streamlining the process would be folded into the acquisition request for proposal (RFP)

before the program could proceed.[587] The history therefore does a good job of capturing the

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[584] Les Aspin's directive read, in part, "The Secretary of the Air Force, assisted by the Secretary of the Navy, will consolidate initial fixed-wing aircraft training for all Services and transition to a common primary training aircraft;" 3. The memorandum, which clarified a diverse set of shared roles and missions across the services, was quite specific about aviation training, mentioning the four pipelines into which students would split and directing instructor exchanges starting in 1993, with students following in 1994.
[585] David Hughes, "USAF, Navy Enter Joint Training Era," *Aviation Week & Space Technology* 141, no. 8 (1994): 40-42.
[586] *History of Air Education and Training Command 1 July 1993 - 31 December 1995*, 1—Narrative, 142.
[587] Ibid., 143. Office of the SD noted that the draft RFP, "at almost 1,000 pages and way too detailed," was not consistent with ongoing defense reform initiatives. Darleen Druyun, then the Assistant Secretary of the Air Force for

general exasperation within AETC at seeing its carefully laid plan delayed—but not destroyed—by Johnny-come-lately exogenous interference.

While it is true that late-program adjustments and the competitive selection process were 'interesting' in the same way that the Sinitic curse bequeaths a fascinating series of life events to foes, these events seem only to have inoculated the JPATS program. Having fought for a robust set of aircraft requirements to meet Congress's mandate for jointness, there seems to have been no loss of enthusiasm among the services to fight for their shared trainer on its well-vetted merits.

The winning entry, like most of the competitors, was a complex venture that paired a foreign aircraft manufacturer with domestic partners in the aircraft engine and airframe industries (see Table 4.1). Raytheon structured its proposal using the aircraft manufacturing facilities of its Beech subsidiary to manufacture an airframe based on an existing design, the PC-9, made by Swiss aircraft manufacturer Pilatus.[588, 589] The aircraft was to be powered by a Pratt & Whitney

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Acquisition, agreed to lead the formation of a joint "red team" to meet the OSD stipulation. Such simplification was counter-cultural for the Air Force, but more in line with the way the Navy had traditionally conducted its acquisitions programs. Amusingly, the Air Force expressed satisfaction with its effort to "streamline" the document, trimming its length by twenty-five percent and "contractor data reporting requirements" by half.

[588] Carroll, "Raytheon Wins Contract for Planes," 85. While Raytheon and Pilatus originally planned dual global marketing of the Pilatus *Mk II* aircraft, their relationship after the competition had "become distant." Though Pilatus receives a design royalty for each *Mk II* Raytheon builds, the airframes produced in the U.S. are "direct competitors" with the Pilatus PC-7 *Mk II* and PC-9 aircraft on the global market; see Bill Sweetman, "Choosing a Primary Air Trainer," *Jane's International Defense Review* (1997): 71. Indeed, the Pilatus PC-9 has since defeated Raytheon's JPATS in head-to-head competition to supply a basic flight trainer to Ireland; "Switzerland's Pilatus Awarded Contract to Supply Trainer Aircraft for Ireland," *Defense Daily International* 4, no. 4 (2003): 1.

[589] "JPATS Criteria Faulted," *Defense Daily*, 10 July 1995, 1. The corporate ownership history of Beech and Raytheon merits review: Raytheon Company made Beech Aircraft Corporation its subsidiary in 1980, starting a pattern of larger corporations acquiring aviation arms that included General Dynamics' purchase of Cessna Aircraft and Chrysler's purchase of Gulfstream in 1985. Facing a slowdown in its prop-driven commercial business, Raytheon-Beech diversified by purchasing Mitsubishi Aircraft and restyling the Mitsubishi *Diamond II* as the *Beechjet*. The company has restructured several times since then, including an acquisition of British Aerospace PLC and its Hawker line of business jets, which became Raytheon Corporate Jets and collocated to Wichita, Kansas, along with Beech. Raytheon sold Hawker Beechcraft in 2006. Heavy debt and the financial crisis of 2008 forced a 2012 bankruptcy, from which the company emerged independently in 2013 under its current name, Beechcraft Corporation. It produces King Air, Bonanza, Baron, the T-6, and AT-6, and is out of the jet production business entirely; see "Raytheon Aircraft Holdings, Inc. History," Funding Universe, accessed 23 April 2014, http://www.fundinguniverse.com/company-histories/raytheon-aircraft-holdings-inc-history/; Russ Niles, "Beechcraft Corporation Emerges from Bankruptcy," AVWeb, accessed 23 April 2014, http://www.avweb.com/avwebflash/news/Beechcraft_Emerges_Bankruptcy_208191-1.html.

PT6A-68 engine.[590] The final configuration and technology of the winning entry, though, was a product of the necessary steps that had driven jointness; it was not a factor driving cooperation. Once the Air Force made the litany of compromises needed to bring the Navy onboard and "not buy a trainer we couldn't afford," a single-engine, tandem, turboprop was likely to be the winner based on cost, which made the Beech-Raytheon partnership centered around the Pilatus design well positioned to win.[591]

Acquisitions programs and strategies are complex endeavors, and the outcomes rarely seem predictable or even intelligible to an outside observer. Combine this fact with the selective information released and reported to various constituencies, and the process seems muddled indeed. Raytheon's selection announcement came just weeks after the *Ranger 2000* aircraft, a venture of Rockwell and German aircraft manufacturer RFB, had been announced as the best performer in a test pilot evaluation of competing JPATS systems.[592] (The test pilot evaluation is a portion of the competition, but not the only decisive factor, which accounts for value, logistics support, ease of maintenance, simulator compatibility, and the like.) With the advantage of hindsight, though, much of the smokescreen of corporate obfuscation has dissipated, and it seems unlikely that anything other than the Raytheon-Beechcraft entry would have been sufficient to win. It was the only competitor to meet all flying requirements without deficiency, and, as a single-engine turboprop, most assuredly was in the tranche of choices with the lowest life-cycle costs.[593]

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[590] Pratt-Whitney had an outsized chance of success no matter the selection outcome; their engines powered three of the five final contenders for the contract. See Table 4.1 for details.

[591] O'Keefe interview, 6 May 2014.

[592] David A. Fulghum, "Ranger 2000 Tops in JPATS Test," *Aviation Week & Space Technology* 142, no. 23 (1995): 24.

[593] One of the requirements for the JPATS was that it be able to spin to demonstrate entry and recovery into out-of-control flight regimes. Though he personally advocated against spins *per se* as the only way to teach this skill set, James DeGarmo, the JPATS program manager at ATC after Merten, relayed that the PC-9 was "the only airplane in

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As a matter of frequent occurrence whenever U.S. services award large defense contracts, the first phase was almost a mere formality before the wave of protests rolled in from losing manufacturers. Rockwell, Lockheed Martin, and Cessna all lodged GAO protests, though Northrop Grumman elected not to protest any of its entries' non-selection, perhaps more embarrassed than irate that it did not win even though defense-aerospace mergers in the 1980s and 1990s meant that it owned three of seven competing companies at the time of award.[594] Cessna's protest was the most earnest and engendered the most congressional attention. Lockheed Martin quickly withdrew its objection, citing a "low probability" of getting the Air Force to change its mind, but noting that any other successful protest could re-open the competition to its proposal.[595] According to Sladek, protests should be a method of last resort when "the 'winner' was not the best choice, or the protester has truly found a problem, hidden requirement, or something the government messed up." He also opined that "they bring havoc to the program…are a huge resource sink, and most importantly, they *stop* the program…nothing gets done."[596] Cessna's protests seem to have violated this informal philosophy. Nominally founded on optimistic estimates of low maintenance costs their JPATS entry would enjoy by being based on the company's newest corporate jet, the company lodged a spirited protest that pivoted more on Senator Robert Dole's clout and its own incredulity that the Air Force would actually select a turboprop as a primary trainer.[597]

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the competition that really spun;" DeGarmo interview, 28 April 2014. DeGarmo also noted that Raytheon, for which he later worked, used Widnall's "no deficiencies" letter as a marketing tool for outside sales of the T-6.

[594] See, e.g., "Rockwell Protests Air Force JPATS Selection," *Inside Defense Daily*, 27 July 1995, 1; "Northrop Grumman Will Not Protest Raytheon's JPATS Win," *Defense Daily*, 28 July 1995.

[595] "Lockheed Martin Withdraws JPATS Complaint with Air Force," *Defense Daily*, 26 July 1995, 1.

[596] Rick Sladek (Lieutenant Colonel (retired), USAF; former chief of ATC aircraft requirements (ATC/XPRF)), e-mail exchange with the author, 28 May 2014.

[597] Cessna, by the admission of one of its own program managers, was late to join the JPATS competition, and consequently faced a race against time to be ready. Given the significant modifications required to turn a *Citation X* into a JPATS candidate, along with the extra cost of acquiring and fueling jet aircraft, Cessna's life-cycle cost estimations—based on a hope that parts commonality would reduce expenses—seem to be overly optimistic; see

Although it did prevail as the legitimate contract winner after the ensuing award-process review, delays induced by the gender-accommodation questions and contract-award process protests paused Raytheon's start on manufacturing for seven months.[598] The 1995 award helped the company, for which the defense-electronics business was in a slump, and which had just lost a bid to build a follow-on lot of Sea Sparrow missiles. Other than the JPATS aircraft prospect and its recent acquisition of the surging defense-electronics manufacturer E-Systems, Raytheon's defense-related businesses were the company's "weakest," driving it to seek concessions from Massachusetts where those businesses were based.[599] Allowing thirty-three months of government post-award testing Raytheon estimated it would have "sales off the line" to foreign buyers within four years.[600] The pain of the protest and the spoils-to-the-victor outcome exhibit the zero-sum nature of defense bidding, one of the factors that has so reduced the inventory of eligible competitors in the U.S.[601]

3. Beginning Procurement and the Air Force Rollout
The initial production models of the T-6 for the Air Force, who as planned bought its airplanes first, had to overcome significant hurdles. For all the emphasis placed on the program being non-

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"Cessna All-Out to Complete JPATS," 40. Chiabotti offered, "They weren't paying attention," and blindly hoped the Air Force habit of buying jet trainers would have more impact on the process than it did; Chiabotti e-mail, 6 June 2014. Lockheed's president also expressed dismay that the Air Force would consider turboprops along with jets in the competition; see "JPATS Criteria Faulted," 1. Kross added that Cessna had "a clear feeling that the Air Force had to be jets. Fortunately, we were smart enough to nix that [requirement for JPATS] and it worked out well;" Kross interview, 1 May 2014. Cessna was the first to file a protest, attempted to protest jointly with Rockwell (who had also fielded a losing jet competitor), kept its protest intact longer than any other company, and threatened legal action even if Congress's Government Accounting Office (GAO) initially ruled against it; see "Thrown Out," *Defense Daily*, 28 August 1995, 1; "Lockheed Martin Withdraws JPATS Complaint with Air Force," 1; "Here's to the Losers," *Defense Daily*, 17 July 1995, 1; "Rockwell Protests Air Force JPATS Selection," 1; "Air Force Assessing Impact of JPATS Delay," *Defense Daily*, 7 February 1996, 1; "GAO Rules in Favor of Raytheon in JPATS Protest," *Defense Daily*, 6 February 1996, 1.

[598] "Air Force Assessing Impact of JPATS Delay," 1.

[599] Ken Johnson, "Raytheon in Bay State Slumps Amid Records," *Eagle-Tribune*, 14 July 1995, 21.

[600] "Raytheon Sees Foreign Sales on the Horizon for JPATS," *Defense Daily*, 7 July 1995, 1. Despite the delays induced by challenges to the competition, Raytheon achieved this goal, announcing its first foreign sales to Canada's Bombardier in 1997, with delivery scheduled for late 1999; see "First Foreign JPATS Sale is to Canada's Bombardier, Raytheon Says," *Defense Daily*, 19 December 1997, 1. Greece became Raytheon's second foreign client for JPATS, ordering 45 aircraft; see "Raytheon Receives $30 Million Order for JPATS," 1.

[601] See, e.g., Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 69.

developmental, the resultant aircraft had less than ten percent of its components in common with a PC-9. Pressurization, instrumentation, ejection seats, harnesses, landing gear, and a requirement for a canopy that could withstand the benchmark of a four-pound bird at 270 knots provided plenty of engineering and manufacturing challenges for the winning contractor.[602] During the early years of the JPATS program, both the trainer aircraft and the ground-based training system experienced production delays, funding shortfalls (both in the form of congressional cuts as well as SPO miscalculations), rising aircraft cost, unforeseen maintenance headaches, and significant production delays.

At least the effort to name the aircraft went more smoothly. The name *Texan II* resonated with all concerned audiences, both because the original U.S. trainer designated the T-6, which flew in the World War II era, was nicknamed the *Texan,* and because both services had training bases in the state of Texas that planned to use the aircraft.[603] The JPATS team continued to display the same exogenous political savvy that had provided a solid foundation in the requirements formulation.

Despite the growing pains of transitioning the new airplane into routine training use, it did make the jump and enjoyed early success and good user reviews. In 1999, Raytheon completed the process to attain Federal Aviation Administration type and production certifications for the *Texan II*, an unusual procedure in that manufacturers of military aircraft usually skip certification

[602] Canopy and engine resistance to bird strikes in this era was tested by firing foul of the appropriate weight at sample windscreens using a specially designed 'chicken gun.' Debate about whether to use frozen or thawed poultry carcasses has been the stuff of urban legend for decades (the Air Force traditionally went with frozen—the more rigorous test), though of late the service has switched to simulated birds made of clay and plastic out of respect for contemporary views on treatment of animals; see Tina Barton, "'Chicken Gun' Helps Shuttle Return to Flight," *Airman* 48, no. 11 (2004): 8. For treatment of the mythical aspects of the story, see Barbara Mikkelson, "Catapoultry," Snopes.com, accessed 1 June 2014, http://www.snopes.com/science/cannon.asp.

[603] See Dave Nolan, "Air Force, Navy Name Joint Training Aircraft 'Texan II'," *Airman* 41, no. 8 (1997): 12. Rick Sladek takes credit for the idea to name the aircraft the *Texan II*, and this investigation did not reveal any serious counterclaims to that story. *Texan II* is a clever name with multi-service appeal, though it lacks the direct approach used in naming the T-1 the *Jayhawk*, a nod to its state of production, then represented in the Senate by the powerful majority leader Robert Dole. Several interviewees attributed Stephen Chiabotti with credit for that moniker. Naming credits seem to be unattributed, just like the staff work of the master plans.

for civil sales.[604] Multi-service testing to certify the aircraft for student flight operations began in early 2000.[605] The first production model of the T-6A arrived at Randolph Air Force Base in March 2000, where pilots from both services flew a series of operational tests.[606] The first Air Force students began training in the aircraft at Moody Air Force base in Valdosta, Georgia, in October 2001.[607] The initial joint pilot training (JSUPT) class, comprised of thirteen Air Force and two Navy students, completed the JPATS phase of training on 26 April 2002. While the class trained successfully in the *Texan II*, its instructors used an old (albeit proven and reliable) system for the grading of students and tracking of training progress, a prelude to an issue that would plague the early years of the program and *did* impact its joint staying power.[608]

In 2001, Raytheon "struggled mightily" to deliver its contracted allotment of T-6s, which specified fifty-four aircraft by the end of the year.[609] The company made the quota with a series of extraordinary efforts at its production facility, but then fell off the pace again quickly in 2002. The SPO cut a deal with Raytheon to allow a 120-day delay of thirteen aircraft in exchange for understandings about spare parts deliveries, paint improvements, and a modification to the air-conditioning system of the aircraft.[610] Such arrangements are part and parcel of a new aircraft production program, and the working out of these kinks is another reason why the Navy

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[604] Robert Goyer, "T-6A *Texan II* Gets FAA Certification," *Flying* 126, no. 11 (1999): 44.

[605] Edward H. Phillips, "T-6A to Begin MOT&E Testing," *Aviation Week & Space Technology* 152, no. 13 (2000): 37-38.

[606] Robert Sligh et al., *History of the Air Education and Training Command 2000-2001*, ed. Thomas A. Manning, vol. 1—Narrative, (Randolph Air Force Base TX: History and Research Office, AETC, 2003), 206.

[607] Vivienne Heines, "Full-blooded Texan T-6A puts muscle into primary flight training," *Training & Simulation Journal* (2004): 40.

[608] The "limited" system used was called TRIM. TIMS was not fully online until June 2002, and AETC Commander General Donald Cook announced JPATS IOC as of 12 July 2002; see Joseph Mason et al., *History of the Air Education and Training Command 2002-2003*, ed. Thomas A. Manning, vol. 1, (Randolph Air Force Base TX: History and Research Office, AETC, 2005), 195.

[609] Ibid., 194.

[610] Ibid., 194-95.

benefited from its sister service acting as lead agent and accepting the first part of the production run.[611]

Reaching 250,000 flight hours in 2005 and 500,000 in 2007, the aircraft established a safety record that compared favorably with the T-37 it replaced and other primary trainers.[612] Commanders of fixed-wing training squadrons, both primary and advanced, praised the aircraft's performance and its compatibility with a rapidly modernizing and digitizing tactical fleet.[613] The T-6 had higher sustained g-force capacity than the T-37 it replaced, and, even though g-onset rates were lower than in the *Tweet* (which had boasted the highest rate in the Air Force fleet, even higher than tactical fighters), students and instructors began to wear a lower-body g-suit to counter the rush of blood away from the brain to which high-g flight subjects pilots.[614]

Although JPATS had achieved initial operational capability (IOC) at Moody Air Force Base, joint testing and full acceptance of the T-6 remained to be completed. The Air Force's Operational Test and Evaluation Center (AFOTEC) and the Navy's Operational Test and Evaluation Force (OPTEVFOR) completed their work on 30 January 2003, releasing mixed results. In essence, both agencies deemed the aircraft well suited to the aviation-training role for which it had been designed. However, because of minor discrepancies in demonstrated mission-capable and mission-reliability rates, the testing agencies rated it 'unsuitable' overall. Their report went to great effort to ameliorate the harshness of that rating, and pleaded that "it [was]

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[611] The training integrated management system (TIMS)—which records student progress, ground training event scores, and flight grades—also fell behind schedule, again delaying the initial operational capability (IOC) for JPATS, which had originally been scheduled for 1 June 2001; see ibid., 195.

[612] Orton, "Air Force T-6A *Texan II* Flies 250,000th Hour."; Groendyk, "T-6A *Texan II* Reaches Half-Million Flight Hours."; Mark Nunn and Tim Arnold, "Trainers," *Flying Safety* 62, no. 1 (2006).

[613] Michael J. Sherlock, "Modify the Goshawk and the Pilot Training Syllabus," *Proceedings* 129, no. 12 (2003); Vandiver interview, 11 April 2014.

[614] Frank Wolfe, "G-Suits for T-6 Pilots to Reduce Loss of Consciousness Incidents During Training," *Defense Daily International* 2, no. 40 (2001): 1.

almost there."[615] A similar much-ado-about-nothing 'rejection' had occurred earlier; though

OSD found the aircraft "unreliable" in a publicized report sent to Congress in late 2001, the Air

Force certified Raytheon for full-scale production less than two weeks later.[616]

The Navy again benefited from the Air Force's initial struggle with the ground-training

systems associated with JPATS, waiting to begin its initial test of the TIMS system at NAS

Corpus Christi, Texas, until September 2004.[617] The TIMS system, complex even by Air Force

standards, was a true quantum leap forward for the Navy, who had used a grading system "that

could be done on the back of a napkin" for decades of aviation training; instructor pilots "were

not thrilled" with the extremely capable, but complex, new computerized system.[618]

Despite the early growing pains, in its role as a primary trainer the *Texan II* has been, with

few qualifications, a success for the U.S. Air Force. The Navy was next in line to see if it

deemed adequate the aircraft toward which it had followed the Air Force's lead.

4. Continued Procurement and the Navy Purchase

Part of the Navy's easy cooperation in the JPATS program arose because of the in-turn nature of

the program, meaning that the Navy would buy its aircraft *after* observing the Air Force take

control of its own. Such an arrangement is beneficial to the second service. As Walters summed

it up, "It *was* joint, but it was joint in the best of all possible ways [for the Navy], which is to say

joint-sequential. If it had been joint-concurrent, the Navy might have argued more violently than

it did."[619]

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[615] Mason et al., *History of the Air Education and Training Command 2002-2003*, 1, 198. Dissatisfaction with the TIMS system remained, however, and was not mitigated by forgiving caveats, as Laughlin Air Force Base also reverted to TRIM along with its T-6 roll-out in 2003; see ibid.
[616] "Raytheon Plane Found Unreliable by Pentagon," *Los Angeles Times*, 22 November 2001; "Air Force Approves Raytheon's T-6A Trainer for Full-Rate Production," *Defense Daily International* 3, no. 6 (2001).
[617] *History of the Air Education and Training Command 2002-2003*, 1, 200.
[618] Bartholomew questionnaire, 2 May 2014.
[619] Walters interview, 28 April 2014.

O'Keefe was straightforward in admitting that the Navy was initially "really not interested in participating;" it was "eventually told to participate and find a way to pay for the program."[620] The way to do that in the Navy POM was to give up future funding for two F/A-18s and one T-45, which helps to explain why the Navy has consistently shown a tendency to delay its purchase of its own fleet of T-6s. The Navy was not as desperate for a replacement primary trainer as the Air Force had become in the 1980s, and its budgetary concerns over its aviation fleet are of a different tenor than the Air Force's. The Navy has to protect a whole aviation budget from the imperatives of the larger fleet, whereas programmers in the Air Force almost always give first priority to aircraft.

In 1997, the Navy's stated procurement goal was 339 aircraft, not including the 29 needed for bi-service navigator training.[621] In 2011 testimony, the Navy placed its JPATS requirement at 297 total aircraft.[622] Congress had to encourage the Navy to buy the T-6 at its planned rate; as early as 2001 it began to indicate that it would delay procurement from what it had originally stated.[623] Prior to passage of the 2002 NDAA, Representative Joe Scarborough added language to force a Navy buy even though the service had requested none for that year; his motivation was to keep unit price and maintenance costs lower than they would be if fewer aircraft were purchased.[624] This marks on ongoing trend that as early as 2002 led to speculation about a

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[620] O'Keefe questionnaire, 5 May 2014.

[621] "Air Force, Navy Name Joint Training Aircraft '*Texan II*'," *Airman* 41, no. 8 (1997): 12.

[622] (Testimony by Mark Skinner, Principal Military Deputy to the Assistant Secretary of the Navy (Research, Development, and Acquisition), U.S. Navy and Terry Robling, Deputy Commandant of the Marine Corps for Aviation, U.S. Marine Corps and Kenneth Floyd, Director of the Air Warfare Division, U.S. Navy) U.S. House of Representatives, Armed Services Subcommittee on Tactical Air and Land Forces *FY2012 Combat Aviation Programs Update*, 112th Congress, 1st session, 2 November 2009, T-6B JPATS.

[623] See, e.g., Gary Roughead, "Capitol Hill: Update," *Wings of Gold* 26, no. 3 (2001); Wolfe, "G-Suits for T-6 Pilots," 1.

[624] "HASC: Air Force May Need More B-2s for Global Strike Task Force," *Defense Daily International* 2, no. 30 (2001): 1-2.

wavering of the "Navy's commitment" to buy JPATS.[625] Apparent Navy reluctance to continue

purchasing JPATS was consistently balanced by congressional pressure to buy at the

predetermined or, often, accelerated rate, as evidenced again by 2003 NDAA mark-ups.[626]

Happily (at least for the cause of jointness and the aircraft manufacturer), Congress has

continued to prove unabashed in weighing in on JPATS, in this instance to force the Navy to

honor its purchase commitment through specific 'mark-ups.' These are legislative addenda that

prevent the Navy from spending a portion of its budget on anything *except* the JPATS, which is a

very effective tool, since no service likes to willingly leave money on the table. Congress used

this tack several times in the early 2000s to keep the T-6B on track; the Navy of late has been

buying as planned, though it has taken the trouble to release reports that reduce its projected total

purchase by several aircraft.[627]

Having discussed the brightest spot of the joint aspect of the JPATS program, the aircraft

acquisition, this investigation now turns to the lesser success: that of joint training programs. A

sort of afterthought from the very start, the impetus for joint training was different, and its

outcome in practice has been less enduring, though in practice it may have yielded the best

dividends in terms of inter-service relationships.

B. Building Joint Primary Aviation Training Programs
1. DoD's Me-Too Directive
It is clear that Congress desired to see a joint acquisition of a training airframe. It is also clear

that the services, seasoned from previous experience, realized that it made sense to acquire a

training system that accompanies the aircraft being bought, either by having the airplane

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[625] "Defense Watch," 1.
[626] "HASC Panel Adds $3.2 Billion for Porcurement, Restricts Comanche Funding," *Defense Daily* 214, no. 23 (2002): 1.
[627] See, e.g., Christopher J. Castelli, "Report: Navy Wasting Hundreds of Millions on Unneeded Aircraft," *Inside the Pentagon's Inside the Navy* 23, no. 48 (2010); "Navy Slashes Training Aircraft Procurement by Twenty Planes, Shifts Funds," *Inside the Pentagon* 27, no. 1 (2011).

manufacturer deliver that system or—as in the case of the JPATS—act as the contract-awarding

body that hires a separate contractor to provide it.[628]

JPATS evolved to encompass a third aspect, one that appears to have been outside

Congress' original mandate and the services' initial conception. That aspect was the creation of

fully joint training, i.e., bases and programs that accommodated students from multiple services

in the same facilities and flight-instruction units. An interesting facet of this study is the origin of

this level of systemic jointness, which went above and beyond the original congressional

mandate to consider merely a common acquisition of an aircraft and training system that both

services could use for their existing, independent training programs. Congress planted the idea of

joint acquisition in legislation, the Air Force watered it with a trainer aircraft master plan that

brought onboard the Navy, and Air Force and Navy action officers made it grow through diligent

framing of requirements and then briefing the correct collection of Washington officials. Another

entity, however, introduced the concept of joint training, one that placed the Navy and Air Force

together in the hothouse of training each other's students alongside each other. This idea carried

the day because it was in line with Congress' original intent and the feelings of the day on how

military programs should appear—joint on every possible facet—even though the services

probably would have never suggested such a scheme on their own.[629]

2. Service Preferences
The Navy paid ever-closer attention to the Air Force's effort as the acquisition process moved

forward, and its interest redoubled again when it realized exogenous attention—this time from

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[628] The most likely alternative—having the SPO act as the integrator of associated ground systems—gave ATC planners trepidation, because observers had seen Air Force Systems Command management result in unfavorable outcomes for the B-1 bomber program and, to a lesser extent, the T-3 acquisition; Chiabotti e-mail, 6 June 2014.
[629] In five years of collected official memoranda, ATC histories, and informal documents, no mention of full joint training appears in either service's documentation until after the Aspin memorandum of April 1993. It is worth mentioning, however, that Merten, Umbach, DeGarmo, and Chiabotti, representing opinions from both the Air Force and the Navy "knew that joint acquisition of a training system would beg the larger question of joint primary training. And we were not afraid of it…ALL thought there would be goodness in training together during the formative years of an aviation career;" ibid.

DoD—toward the matter was serious and would lead to normative decisions about acquisition. More plainly, according to one of the key Navy figures involved, "Without pressure coming out of the Pentagon, JPATS would never have happened."[630] The official ATC history from 1989 recounts that "[j]ointness was the byword throughout 1989, as the Air Force and Navy continued to exchange information on primary pilot training," but this was comparative data on the different services' means of training as it pertained to aircraft requirements for the acquisition, not a plan to combine with one another.[631]

The DoD directive induced perturbations that, had the upfront requirement vetting by the services not been so solid, might have put the program at risk. The AETC history office observed that changes in the revised ORD reflected a decreased procurement goal for both services—a result of the overall defense drawdown of the 1990s—and a change to the planned initial joint training bases—an outcome of Secretary of Defense Les Aspin's directive to "consolidate fixed-wing aircraft training across the board and to get started right away."[632]

As mentioned earlier, there was also a realization that decisions made about primary aviation training would affect BRAC assessments and the basing options of both services.[633] As O'Keefe recounted, the Navy realized early on that participating in joint training as well as joint procurement would provide additional leverage in bargaining over BRAC decisions.[634] The services believed that having visibly joint aviation training programs at certain bases would strengthen their resistance to BRAC closure. Since the political process associated with BRAC is something of a 'black box' that masquerades as a transparent, rule-based, objective decision

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[630] O'Keefe questionnaire, 5 May 2014. "They never would have done it if someone hadn't made them, nor would they continue to do it if it wasn't mandated by Congress;" Bartholomew questionnaire, 2 May 2014.
[631] Manning et al., *History of the Air Training Command 1989*, 1—Narrative, 128.
[632] *History of Air Education and Training Command 1 July 1993 - 31 December 1995*, 1—Narrative, 143.
[633] See, e.g., 2-3.
[634] O'Keefe interview, 6 May 2014.

situation, the assertion is impossible to prove, but the facts are that none of the joint aviation training bases (Vance Air Force Base, Oklahoma; Whiting Field, Florida; and Pensacola Naval Air Station, Florida) succumbed to BRAC closure or significant curtailment of their training missions.[635]

There is ample evidence from early on in the development of JPATS that the services perceived an external demand for visible cooperation. Evidence that the concept of JPATS as a fully joint undertaking had firmly established itself with the services came in deliberate efforts by the services to ascertain how jointly administered pilot training would work, which began well before the aircraft RFP was complete. In 1993, Navy instructor pilots began to arrive at Reese Air Force Base in Texas. Two joint primary pilot training squadrons were established with joint leadership (meaning that squadron command rotated between Air Force and Navy personnel) and instructors trained a pool of students without regard for the service from which they came.[636] Although it was a DoD mandate they might not have preferred, the services complied with alacrity and with a visible display of obedience.

The Navy and Air Force also quickly consolidated their training of non-pilot aircrew. "Almost before the ink was dry on Defense Secretary Les Aspin's April 1993 memo mandating consolidation of fixed-wing aircraft training, the Air Force and Navy agreed that the idea of joint

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[635] Since "individual representatives fight tooth and nail to keep open the military bases located in their districts," Congress designed the BRAC process to intentionally limit "the ability of representatives to single out individual bases in their deliberations. Instead, Congress must vote to accept or reflect an entire list of bases recommended by a military-advised independent commission;" Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 67. The technocratic process itself fell victim to congressional disfavor, though, and there has not been a round of BRAC since 2005, with recent defense authorization legislation expressly prohibiting the formation of a BRAC commission or other elements needed for the process; see, e.g., Paul McLeary, "U.S. Army Leaders Push for Another BRAC Round," *Defense News*, 25 March 2014. http://www.defensenews.com/article/20140325/DEFREG02/303250029/US-Army-Leaders-Push-Another-BRAC-Round.
[636] Hughes, "USAF, Navy Enter Joint Training Era," 40.

navigator training held considerable promise."[637] Deep in the throes of BRAC outcomes that had

shuttered key training bases for these specialties, the two services emerged in 1994 with a plan

that dictated all primary navigator students complete primary training at Pensacola Naval Air

Station. Some Navy intermediate students trained at Randolph Air Force Base, and both

locations had squadrons that were "joint…from top to bottom," meaning that command of the

squadron and other positions of higher responsibility rotated between officers from both

services.[638] By the end of 1995, joint navigator training—including the production of Electronic

Warfare Officers at the Navy's Corry Station, something the Air Force had not done for more

than two and a half years—was in place at joint-service locations throughout Florida and Texas.

Joint training for navigators proved to be faster to establish than that for pilots. SUPT, in

many ways the original nucleus of the idea for jointness, actually threatened a specter of unifying

all fixed-wing training under the Air Force, especially given its larger, below-capacity training

infrastructure in combination with a cost-conscious DoD that was not shy about inserting itself

into decisions. The Navy instinctively resisted such a loss of control of its aviation-accessions

training—not only would it mean a loss of shore billets that were coveted by officers eager for a

break from (or avoiding altogether) sea duty, but there is a fundamental resistance to turning over

control of the system that generates a service's newest trainees in any discipline, especially

aviation.[639] These sentiments caused the Navy to pursue status as full partners in the incipient

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[637] *History of Air Education and Training Command 1 July 1993 - 31 December 1995*, 1—Narrative, 167.
[638] Ibid., 168.
[639] Evidence for this innate desire to maintain service identity in primary aviation training appeared in debates over undergraduate helicopter training. Grant Webb argued in 1996 that the fixed-wing training performed by Navy students prior to helicopter training was superfluous, because Army students went directly to rotary-winged training craft without apparent difficulty. Several studies and reports supported this conclusion. Further, the Army's training capacity for rotary-wing primary training at Fort Rucker, Alabama, was at seventy percent of capacity. Since the Army has eighty percent of DoD's rotary-wing aviation fleet, the figures meant that the Army had the capacity to train *all* future helicopter pilots. Webb realized that "the Navy's adoption of JPATS…postpone[d] the question of consolidation for a while," though he remained committed to the idea that rotary-wing joint training under the Army

system. Joint training, though it was inspired by exogenous input, did not have the same endogenous-led spark that illuminated acquisition. It thus emerged and existed in a constant state of discomfort within the services.

Fixed-wing joint training programs are not the only ones that have showed signs of strain. The Air Force was caught unawares in 2003 by an Army announcement that it would be shutting down its UH-1H training fleet by 1 October 2004. The Air Force had relied on the Army to provide primary training to its helicopter pilots at Fort Rucker, Alabama, since 1971.[640] The Air Force's scramble to provide an alternate means of training some fifty pilots a year demonstrates the risk of outsourcing segments of specialized aviation training to sister services, and justifies to some degree the Navy's suspicion of being cut out of primary production as a result of JPATS. This study concludes that without long-term exogenous oversight and enforcement, joint training programs that affect core service identities (as does aviation training in the Air Force and Navy) are unlikely to survive.[641]

III. Relation to Theory

Considering the narrative of the JPATS development against the sample of theoretical questions raised in Chapter 2 helps to identify some of the most important dynamics at play. As in the case of AirLand Battle, many of the theoretical considerations are relevant to defining the space in which jointness was effected, and these speak chiefly to reasons why jointness is difficult to attain. A smaller number have explanatory power for how tendencies against jointness may be overcome, but it is in this area that the following discussion concentrates.

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would occur in the future; see Grant A. Webb, "The 'Plane' Truth About DoD Undergraduate Helicopter Pilot Training Consolidation" (Master's Thesis, United States Marine Corps Command and Staff College, 1996), 37.

[640] Mason et al., *History of the Air Education and Training Command 2002-2003*, 1, 168.

[641] It is this core-identity aspect of aviation training that makes it a key component of professional identity, placing it in the realm of contention that Andrew Abbott discussed; see Abbott, *The System of Professions*. One would not expect to see disputes over other 'joint' schools that are less central to the services' identities, and indeed joint education in areas as diverse as law, explosive ordnance disposal, the chaplaincy, and engineering continue without signs of abatement because they are efficient. One can tell how central one's career is to her service identity by observing how 'joint' the training for it is; the relationship is an inverse one.

A. General Theories of Organizational Interaction
1. Public Goods
The magnitude of the primary-trainer problem, viewed from the lens of national security, is of

much less magnitude than the concept of a Soviet invasion addressed in the preceding chapter or

of the counter-insurgency warfare addressed in the one to follow. Such is the mismatch of

including a peacetime acquisition project in the body of case studies. However, the theory is not

without applicability, as the Air Force tacitly recognized the appeal of free riding to the Navy

and structured the acquisition program so that it could initially do just that—in this case by being

the second service to procure the T-6 after some of the initial-run kinks had been smoothed away.

Once the problem was re-framed in a way that stated it in terms of mutual interest to both

services and established its appeal throughout all layers of the defense establishment, free riding

became a settled question. The training-enterprise sub-group of the Navy came to view the T-6

as a program vital to its interests and congressional pressure was able to ward off any larger

institutional temptation to curtail or slow down the purchase of the Navy's share.

2. Organization Theory and Obstacles to Multi-Lateral Negotiation
This study finds that much of the successful acquisition effort traces its origins back to a series of

master plans, authored first to articulate the Air Force's strategy to recapitalize pilot training, and

subsequently offered as an answer to Congress on behalf of all services and the DoD. Further

exploring the efficacy of these documents is worthwhile to better understanding the overall

success of the project. The JPATS saga has many of the characteristics of a multi-lateral

negotiation in which no formal regime is available to impose certainty and order. Fen Hampson

summarized the chief barriers to successful negotiation in these circumstances as "complexity

and uncertainty: complexity created by the large number of parties to the negotiation and issues

on the table, uncertainty heightened by the difficulties of communicating preferences and

exchanging information among a large number of participants."[642] This description affirms the

nature of public goods in the hands of organizations described in Chapter 2—an overwhelming

number of dissociative forces make the likelihood that large bureaucracies will act to preserve or

advance public goods seem unlikely. Given that at least four identifiable large bureaucracies

were in play in the JPATS process (the Air Force, the Navy, DoD, and Congress), one could

easily expect Mancur Olson's warning to apply: "the larger the group, the farther it will fall short

of providing an optimal amount of a collective good."[643]

Individuals and institutions overcame these barriers to cooperation in the case of the

JPATS, however. The trainer aircraft master plans may have played a pivotal role because they

accomplished so many of the functions essential in multilateral negotiation. For example, the

master plans served a role in problem identification, the search for options, agenda debate, issue

definition, and details for a future agreement—all of which are in the purview of "experts…and

the bureaucrats" who figure in the three-phase framework that Hampson described for

multilateral negotiation.[644] As the disputes that cropped up during Navy-Air Force discussions of

JPATS requirements revealed, there were several items that could have derailed cooperation,

since compromise meant that one side or the other would not get its desire. However, the master

plan and the associated vetting dialogues at all times kept the service figures focused on the point

at which their interests converged rather than diverged, i.e., satisfying Congress' unambiguous

call for jointness in acquisition.[645] The influence of the master plans, as well conceived and

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[642] Fen Osler Hampson, "Barriers to Negotiation and Requisites for Success," in *Multilateral Negotiations: Lessons from Arms Control, Trade, and the Environment* (Baltimore: Johns Hopkins University Press, 1999), 23.
[643] Olson, *The Logic of Collective Action*, 35.
[644] Hampson, "Barriers to Negotiation and Requisites for Success," 24 and 26.
[645] The signature pages at the beginning of the 1989 master plan all state that it "addresses the mandates of Congress and provides the background, analysis, requirements, and acquisition roadmap…for the United States Navy and United States Air Force undergraduate pilot training programs;" .ii, iii, iv Hampson wrote that "large numbers need not pose an insurmountable barrier if participants' preferences are homogeneous or convergent;" "Barriers to

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shrewdly constructed as they were, underlines the power of the legislative branch in joint matters, an issue that this section addresses again later.

3. Crisis Cooperation: Fighting as an Indicator of Cooperative Strategy and Intent
The histories of the Navy and Air Force suggest that the services are well versed in disagreeing with each other, even to the point of letting their disagreements become publicly open at the expense of any meaningful compromise. As discussed earlier, despite ample opportunity to disagree on JPATS, though, the services seemed to have argued their way to effective compromises. This calls to mind the positive correlation between decision-situation "fighting" and an overall negotiation strategy of "signaling trustworthiness" discussed in crisis-cooperation literature.[646] While not definitively causal, the observation suggests that fighting over contentious issues in the short term can be beneficial to a longer-term relationship based on trust. As a cursory sketch of the Air Force-Navy past history and participant interviews suggest, overcoming institutional distrust was a necessary step for the two services to work together on JPATS.

Given the reputations of several key players involved in requirements negotiations for JPATS, it seems reasonable to speculate that "violence or coercion" may have been used as a tack to prevail in some decision-situations. A summary of crisis-cooperation also reveals that an organization which uses these behaviors also tends to "make voluntary concessions," a behavior that participants from both services readily accede the Air Force did.[647] There is room to question whether this case study approaches the status of a 'crisis;' given the genuine uncertainty of final outcome, the services' unease about losing control of their aviation programs, and the usual

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Negotiation and Requisites for Success," 28. While not all aircraft desires were convergent, the overarching desire to not cross Congress on this matter was strong enough to engender compromise on lesser issues.
[646] "If the organization…pursues a strategy of signaling trustworthiness, it is likely to fight in individual decision-situations. It will not, however, negotiate or manipulate in these situations;" Svedin, *Organizational Cooperation in Crises*, 128.
[647] Ibid., 127.

legislative time pressure, the search for a new trainer certainly fits within the malleable bounds of the definition. More useful to the understanding of joint cooperation, however, is a basic appreciation that it is helpful to talk about differences rather than act as if they do not exist, even if some open argument occurs. The alternative might have been a breakdown in inter-service trust as the project continued over several years.

4. Professions
Abbott's view of professions provides oblique commentary on the desire of both the Air Force and the Navy to have autonomous control of their primary training programs, which are among the most fundamental mechanisms the services use to shape new members of their respective aviation groups. Arguably, nothing is more important to Air Force culture than its 'pilot culture,' which explains the reflexive move away from Congress' T-45 nudge into finding a way to build an airplane of its own choosing.

Although the Air Force was so effective in using the leverage of joint procurement that it appeared training programs as well as aircraft would move toward increasing commonality, the Navy over time moved back to a point of equilibrium with regard to its own training autonomy. Painting its airplanes orange and specifying slightly different requirements for the T-6B seem like small matters, but in concert with obstacles like increased training expense and syllabus harmonization, enough friction between the services existed that a slow, steady move back to *de facto* autonomy for both services resulted. Separate training pipelines allow distinct cultures to develop, and the ongoing dialogue over professional credibility can continue unimpeded by an inconvenient observation that the baseline of education and experience between the populations of Air Force and Navy aviators is very similar.

5. Agency
Feaver's model of military agency is particularly resonant here. While the Air Force did not

ignore a *formal* legislative directive to buy the T-45 in the wake of its failed T-46 project, it

proved adept at reading the urgency of that intent. By dint of Congress' own enthusiasm for

commonality and the 'joint' label, the Air Force was able to exploit a monitoring-and-

punishment gap with respect to the T-45, turning it through no small effort into congressional

support for its new program. Such an outcome would have been impossible without dedicated

and politically savvy officers who were able to provide all levels of the defense establishment

with an acceptable alternative to the first legislative 'suggestion.' The mechanisms by which the

Air Force effected this reversal are discussed in the next section.

B. Military-Specific Theories
From a perspective of **military-innovation theory**, the JPATS trainer is a trivial example.

Neither service demanded great innovation for its new trainer aircraft—the changes needed were

incremental ones related to the in-cockpit presentation of information, flying pedagogy, and the

economics of operating large fleets of airplanes on a limited budget. Implicit guidance that the

aircraft would be based on existing commercial designs further reduced the incentive for

innovation. JPATS satisfactorily readied pilots and other aviators for the tactical platforms they

would fly later in a military career. If there was a problem with the level of innovation it

exhibited, it was an indictment of extant military aircraft in general and not the JPATS designed

in response to this fleet.

On the other hand, **civil-military relations theory** has much to say about this case, but it is

most effectively employed in concert with a discussion of **service cultures** and institutional

response to bureaucratic threats—in this case, the 'threat' was the Air Force's perceived loss of

autonomy with respect to its selection of primary-training aircraft. Since Jeffrey Donnithorne has

provided an excellent discussion of the way service cultures interact to shape responses to legislative and other exogenous influences, the following discussion begins with reference to his work. To round out the body of theoretical considerations that will inform a pre-theory of jointness, it concludes by capturing the other relevant **structural aspects of the defense establishment** as well as **exogenous factors** of significant influence in this case.

1. Service Cultures and Fear

The Air Force's push to comply with Congress' guidance about joint procurement while burying the specific recommendation to buy the Navy's T-45 recalls Donnithorne's observations about service agency. Namely, one may expect the services to comply with exogenous guidance, but they will attempt to spin *how* they comply in a way that favors their existing institutional preferences whenever possible.[648]

The services, especially the Air Force, seemed to key on congressional anger and direction, but also acted out of fear. For the Air Force, the single biggest worry was its loss of autonomy to determine its own training fleet. Entering the 1980s with a plan to replace its oldest trainer, at the end it had nothing to show for it except language in a defense bill to consider buying the same airplane the Navy was procuring. The Air Force seemed eager to turn this situation around, almost as hopeful to avoid having to buy the T-45 as it was to get a new primary trainer, not get stuck with the T-37 for several more decades, and not "fly the wings off the T-38" by continuing generalized UPT.[649] Perhaps this is because the service most dedicated to aviation retains a subconscious conceit that it should control its own flying-training destiny. Whatever the driving motivation was, it turned this almost unilateral direction from Congress into a 'joint' plan for

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[648] Donnithorne anticipated two types of compliance: "During implementation of clear policies, it [the agency framework—a multi-phased response to external policies] applies actively through standard agency logics. Finally, during the implementation of ambiguous or intractable policies, the agency framework applies passively, receding into the background while the civil-military actors pursue their culturally conditioned understanding of what compliance actually requires in that particular context;" Donnithorne, "Principled Agents," iv.

[649] Chiabotti e-mail, 6 June 2014.

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which the Air Force dictated the terms, through which Congress' requirement for joint participation was met, and with which the Navy was happy enough to go along.[650] Although the choice of a primary-trainer aircraft may seem a 'minor' issue viewed from the loftiest perches of the defense establishment, in the trenches of ATC it was a major concern, and received all the attention that a soldier under fire might give to finding suitable cover.

While many Air Force figures interviewed for this investigation portrayed the Navy as a partner who was a follower or "always behind" in the joint acquisition process, some of the Navy's fears about what might happen in a joint acquisition process come into clearer focus when viewed from its perspective, and these fears have some explanatory power for its involvement throughout.[651] First of all, the Navy, like the Air Force, realized the importance that joint acquisition had in Congress and the DoD and feared getting stuck with a trainer that was far from its needs. For the Navy, who sends more than eighty percent of its primary students to a helicopter or a turboprop for operational flying, one of the least desirable outcomes would have been a high-cost, high-maintenance, high-performance jet. The Navy was happy with its T-34C *Turbo Mentor*, not quite ready to replace it, and feeling somewhat wrong-footed by the unexpected development costs that had gone into procuring its new advanced trainer, the T-45 *Goshawk.*

A second motivating factor with a foundation laid partly in fear was the ongoing BRAC process. The Navy realized that pilot training bases were among those to be affected by directed infrastructure closures. A slide deck prepared for Pentagon briefings clearly anticipates the potential effect of BRAC, and explicitly ties the design of joint primary aviation training to its

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[650] The Air Force's actions reflect what Donnithorne described as an anticipative "shaping the future climate of implementation," one undertaken before Congress got specific, ordering the purchase of T-45s, for example; "Principled Agents," iv.

[651] Sladek interview, 13 May 2014.

outcomes.[652] The Navy and the Air Force both became aware that they had equities at stake in the BRAC process—namely those training bases they wished to close and keep open—and recognized the need for a unified front before the congressionally appointed commission who made final recommendations.[653]

Next, the Navy had an interest in closely following and being a part of both the aircraft requirements and the training system in which it was used because of its preference to run its own helicopter training system. For years, several voices had called for complete consolidation of undergraduate helicopter training under the Army's massive training system at Fort Rucker, Alabama, which had a significant excess capacity. Some writers had even called for the upcoming JPATS purchase to be reduced by an amount commensurate with a Navy curtailment of separate fixed-wing training for helicopter pilots, having them start directly in rotary-wing platforms.[654] In 2004, the Navy's resistance to helicopter consolidation proved prescient, as the Air Force found itself caught in the lurch when the Army switched to a different syllabus and aircraft mix in standing up its 'Flight School XXI,' a program that was incompatible with the Air Force's training goals. In the end, the Air Force acquired Vietnam-era UH-1 *Huey* aircraft from the Army and established a separate training system at Fort Rucker, dissolution of a joint aviation-training program that foreshadowed the split of similar Air Force-Navy programs.[655] The Navy's diligent JPATS participation kept pressure off to further consolidate rotary-wing training until attention on that issue had faded.

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[652] slide 3.
[653] O'Keefe questionnaire, 5 May 2014.
[654] Grant Webb's analysis of the Navy's involvement in the JPATS program shrewdly identified one of the service's interests: "Although the Navy's adoption of JPATS will postpone the question of consolidation for a while, the bulk of the evidence sustains the case for UHPT consolidation at Fort Rucker;" Webb, "The "Plane" Truth."
[655] Roxana Tiron, "Air Force Chopper Pilot Training Splits from Army," *National Defense* 89, no. 613 (2004): 38-39.

Despite all of the benefits that accrued to the Navy in its joint cooperation, the Air Force's management of the overall decision stream, including its bid to be the lead service for the program, is a classic example of what William Riker termed "heresthetics," the art employed by those who set up a "situation in such a way that other people will want to join them—or will feel forced by circumstances to join them—even without any persuasion at all."[656] By presenting the issue of JPATS first as an easy ride for the Navy, then building such outside enthusiasm for its joint aspects that it started to threaten the Navy's autonomy to control its aircraft budget and perhaps basing decisions, the Air Force found itself a very willing partner without having to argue on the merits very much at all. Willingness turned into a sense of urgency—one could even say apprehension—as the Navy realized just how much political momentum the joint project for which it had signed up possessed. This momentum included entailments, such as JSUPT and DoD efficiency management, not conceived in the early meetings at Randolph and Corpus Christi.

2. A Diminished Role for DoD
JPATS is analogous to the 1960s TFX program because it involved an exogenous influence that caused the Air Force and the Navy to jointly define the requirements for a system that both services might have preferred to design on their own. (The Navy demonstrated its distaste for the TFX result by never buying its planned variant of the F-111.)[657] However, there are significant differences that speak to the relative influence of the type of exogenous influence at play. The dominant force acting in the two most important TFX decisions—the decrees that it would encompass 'commonality' between the two services and the direction to select General

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[656] William H. Riker, *The Art of Political Manipulation* (New Haven: Yale University Press, 1986), ix.

[657] "The TFX/F-111 emerged from a joint Air Force/Navy requirement and design effort and progressed four years into RDT&E as a joint development program, at which time the Navy withdrew because of dissatisfaction with weight and cost growth and the performance of the Navy F-111B prototype;" Lorell et al., *Do Joint Fighter Programs Save Money?*, 9.

Dynamics' design over the joint-service choice of Boeing's submission—came from Secretary of Defense Robert McNamara.[658]

In contrast, most of the defining exogenous inputs for the JPATS came from Congress. From the inception of the idea that the Air Force should consider a joint procurement for its next trainer, to aiding the services' effort to build momentum for their jointly developed aircraft requirements, to ensuring that the Navy purchase its agreed share of aircraft, Congress has been the political force of reckoning in this program. Although DoD directives have appeared that have mandated some aspects of jointness, most notably with regard to establishing joint training programs in primary aviation training, these appear as a me-too response to the congressional directives that had set the overall tone of the program, and in hindsight were much less enduring than the legislative direction. The Pentagon protested the requirements Congress put on JPATS in 1992 as one of a handful of 'model' acquisitions programs, saying they would place unnecessarily complex and expensive reporting burdens on manufacturers.[659] Congress reinforced its own decision with additional legislation, and by 1996 DoD had changed its refrain, saying that reform had positively impacted the program by reducing reporting burdens.[660]

DoD did play a significant and pioneering role in shaping JPATS with respect to the matter of gender accommodation, where it acted as an agent of the executive branch, causing conspicuous public interest about five years into the development process. The matter received a healthy amount of Pentagon attention, rallying informal as well as formal women's advocacy

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[658] According to Robert Art, McNamara overruled the unified flag officer leadership of the Air Force and Navy by directing 'commonality' for the TFX, which they found "possible but undesirable," and choosing the General Dynamics design over Boeing, which the service chiefs found "satisfactory but less than desirable;" Art, *The TFX Decision: McNamara and the Military*, 158. McNamara's control of the TFX procurement "retained the loyalties of his secretaries of the Navy and Air Force, but also used them to carry through decisions that were highly unpopular in both those services." In contrast to the politics of earlier U.S. defense establishments, McNamara's complete control of the services was an example of "starkly presented" civilian control over the military; ibid., x.

[659] "Pentagon Says JPATS Plan Would Burden Contractors," *Aviation Week & Space Technology* 137, no. 16 (1992): 29.

[660] "DoD Says Acquisition Reform Pilot Programs Making Progress," *Defense Daily*, 19 March 1996, 1.

groups, and attracting the early notice of Assistant Secretary of Defense Edwin Dorn. Nina

Richman-Loo and Rachel Weber traced the development of the JPATS through a lens of gender,

noting that the system's original sitting-height requirement of thirty-four inches would have

excluded fifty to sixty-five percent of the female population.[661] This was a potential point of

embarrassment for the Clinton administration, as Secretary of Defense Les Aspin had issued an

April 1993 directive that said, "the services shall permit women to compete for assignments in

aircraft, including aircraft engaged in combat missions."[662] Excluding half of the nation's female

population via anthropometric-ergonomic standards derived from the military's standard male

population measurements had an appearance of deliberate resistance to this policy.[663] The Under

Secretary for Defense (Acquisition) directed the Assistant Secretary of Defense (Personnel and

Readiness) to develop a new sitting height requirement that would accommodate at least eighty

percent of women, a requirement that became, according to the aircraft manufacturer, "the single

greatest challenge in the JPATS program."[664] Weber showed that a debate internal to DoD—

chiefly about whether to justify change on the basis of gender equality or foreign military sales

potentials—over the proposed alternations ensued, but ultimately resulted in a recommendation

to alter the sitting-height criterion.[665]

The DoD initiative in directing gender accommodation, a direct extension of White House

policy, cannot be discounted, but it had comparatively little joint effect on the services'

acquisition programs. (Cessna did attempt to leverage the issue in its protest of the contract

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[661] Rachel N. Weber, "Manufacturing Gender in Commercial and Military Cockpit Design," *Science, Technology, & Human Values* 22, no. 2 (1997): 239. See also Nina Richman-Loo and Rachel N. Weber, "Gender and Weapons Design," in *It's Our Military, Too!: Women and the U.S. Military* ed. Judith Hicks Stiehm (Philadelphia: Temple University Press, 1996), 140.
[662] Les Aspin, "Policy on the Assignment of Women in the Armed Forces," (Washington DC: Department of Defense, 1993), 1.
[663] See Sue V. Rosser, "Will EC 2000 Make Engineering More Female Friendly?," *Women's Studies Quarterly* 29, no. 3/4 (2001): 170-74.
[664] Aris, "A Programme for Success," 148.
[665] Weber, "Manufacturing Gender," 243-44.

award, though.)[666] Given the executive intent and legislative mandate, all services would have

had to comply with the instruction. The JPATS trainer aircraft did, however, give DoD a

convenient and politically visible single entity through which it could impose the directive. OSD

also tried to make adjustments to the ground rules for procurement in the middle of the process,

though Congress was able to wrest back control of these and essentially reset them, making

minimal compromise with defense officials, as discussed later in this section. Regardless, the

existence of JPATS and its ongoing requirements development provided the Secretary of

Defense a joint vehicle through which policy could be shaped. This demonstrates the wide array

of actors who may exploit joint initiatives that carry sufficient, self-sustaining momentum. One

need not act to *force* jointness; an able practitioner can use its dynamics to further other political

ends.

From the perspective of the services, DoD input on major acquisitions programs often

seems to span a spectrum that runs from being a combination of well-intended but tone-deaf

advice to punitive encroachment. An example falling toward the former end of that range was an

OSD recommendation based on the analysis of William Lynn, the chief of the department's

analysis and evaluation division, that contract award be delayed from February 1995 to February

2002.[667] Lynn's mid-1994 "budget drill," a planning exercise where the department makes

changes in the timing of future funding levels, was buttressed by a Congressional Budget Office

report that recommended T-37 life extension by relying on the Navy's T-34 fleet for a higher

percentage of primary training.[668] It took involvement from nine Senators, led by Dole, who

wrote to Secretary William Perry, reminding him that "Congress has been deeply involved in

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[666] John Mintz, "Just Plane Too Big? Challenge to Military Trainer's Suitability for Some Female Pilots Stalls Big Contract," *The Washington Post*, 30 January 1996, E1.
[667] Emmons, *JPATS and the T-6A*, 30.
[668] David A. Fulghum and John D. Morrocco, "Pentagon Battles Over Raiding JPATS," *Aviation Week & Space Technology* 141, no. 8 (1994): 23.

structuring and guiding the JPATS effort since its inception" and chiding him for "effectively canceling the program."[669] While underlining the relative strength of Congress over DoD on a program that has its attention, the two reports (one released by a congressional entity) served as a warning to the services that being *too* joint invited unwanted interference, as it allowed outside entities to identify potentials for efficiency that might not align with service preferences or autonomy.

The metaphor Carl von Clausewitz used for explaining the trinity that he believed defined the tendencies of the phenomenon of warfare was "an object suspended between [*sic*] three magnets."[670] In that vein, picture control of acquisitions programs as the random oscillations among a trinity of forces that includes the services at one corner, DoD at another, and Congress at the third. In the JPATS instance, the randomly oscillating magnetic pendulum seems to have taken a few more swings along the service-congressional axis, with only occasional perturbations contributed by DoD's corner. Given that JPATS led to actual joint acquisition—where TFX and several other programs like it did not—a question arises as to whether Congress' exogenous influence is qualitatively different and more effective than that provided by DoD.[671]

3. Stronger Congressional Influence
The preceding narrative has revealed exogenous influence was an inexorable force on the history of the JPATS. The most obvious effect from the highest level of the defense strata is in view throughout as an unbroken thread of interest, legislation, hearings, and directives related to the program. From the moment the T-46 failure became inevitable, members of Congress, while

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[669] Reprinted in *History of Air Education and Training Command 1 July 1993 - 31 December 1995*, 1—Narrative, 147.
[670] Clausewitz, *On War*, 89.
[671] A RAND study examined TFX and three other joint fighter programs, "each of which began with the goal of 100-percent commonality but diverged into unique service variants," highlighting the "persistent tension between the need to maximize system commonality to achieve the greatest cost savings possible and the difficulty of reconciling differing service requirements, which has historically worked against the realization of theoretical joint cost savings;" Lorell et al., *Do Joint Fighter Programs Save Money?*, 18, 20.

trading barbs that grew quite uncivil, also made it clear that they were displeased with the Air

Force for letting its requirements grow out of hand for something seemingly so simple as a

trainer aircraft. There seems little doubt that the Air Force clearly received this communication

and that making a sincere response to it became coded in the organization's DNA for the next

several years.[672] The words "directed by Congress" appear in several early briefings relevant to

the JPATS program Statement of Need (SON) and Joint Statement of Operational Requirements

(JSORD) that appeared in 1988 and 1989, respectively. Among the earliest published missives

from Congress on the topic is a report of the conference committee revising the House and

Senate versions of the 1989 National Defense Authorizations Act. This report endorsed the Air

Force's plan to return to specialized pilot training, directed the Air Force to consider procuring

the T-45 as its advanced trainer (thus keeping open the production line), asked the Air Force to

examine the possibility of procuring the PATS aircraft in concert with the Navy, and directed

DoD to submit a report to the HASC and SASC on its plans for joint aircraft acquisition.[673]

Congress also reflects and magnifies public debates onto the defense establishment.

Recognizing that the JPATS received a significant amount of extra attention because it

developed during an era of significant military cultural change—the opening of a large number

of military positions to women—the legislative branch refused to let DoD and the executive have

the only say in handling the matter. Legislative intervention imparted final resolution to the

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[672] Using the concept of 'organizational DNA' borrows from Gareth Morgan's metaphor of an organization as an organism. In this use, the pertinent entailments are that the Air Force is an open system that responds to input from its environment with "internal transformation (throughput), output, and feedback (whereby one element of experience influences the next)." There is also, as the Air Force demonstrated in the JPATS project, equifinality available in such a formulation. The Air Force had several options open to it and was able to restructure its training arms and other major organizations to achieve its externally motivated goal of jointness; its behavior was not dictated by its structure and came in response to Congress' input; see Gareth Morgan, "Nature Intervenes: Organizations as Organisms," in *Images of Organization*, ed. Gareth Morgan (Thousand Oaks CA: Sage Publications, 2006), 40-41.

[673] U.S. House of Representatives, Conference Committee, *Report (excerpt), National Defense Authorizations Act 1989*, 100th Congress, 1st session, 1989, 1-2.

parameters of gender accommodation, with a Senate amendment threatening in the 1994 Defense

Authorization Bill to prevent the Air Force from spending nearly $40 million of its $41.6 million

trainer budget unless the Pentagon revisited the cockpit design with an eye to gender

accommodation.[674] An ensuing revised RFP decreased the minimum sitting height requirement

to a more liberal 32.8 inches.[675] More significantly, the controversy thrust the JPATS into a part

of the public arena it might have otherwise have avoided, and made it a proxy for the larger

social issue of increased roles for women in combat.[676] Significance beyond the JPATS aircraft's

role as a primary trainer thus continued to accrete to the program, adding gender issues to its

previous joint symbolism. The "political potency" of the issue caused congressional advocates

for Raytheon's competitors to use it as a line of questioning in protesting the contract award and

subsequent GAO ruling upholding the Air Force's original decision.[677] Once the controversy was

settled, the services spotlighted the airframe's inclusivity by having well-known pilot Patty

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[674] See "Senators Want Training Aircraft To Accommodate Female Pilots," *Minerva's Bulletin Board* VI, no. 3 (1993). For the questions raised by the conference committee, see U.S. House of Representatives, Committee on Armed Services, *Conference Report, National Defense Authorization Act for FY94*, 103rd Congress, 1st session, 10 November 1993, 620-21.

[675] In actuality, the "requirement" (or "threshold" in the parlance of military acquisitions) for the JPATS trainer was formally set at thirty-four inches and not subject to change. However, the procurement officials in charge of the program ensured that the winning proposal would accommodate the new measurement standards by establishing "objective" criteria for the new anthropometric standards. Competitors would receive more credit for meeting the objective, and were more likely to win the contract. In the event, all competitors responded to the changed criteria, either demonstrating that their submission met it or by completing redesigns that did; see Anticipated hearing questions and answers: SAF/AQ on JPATS and Other Aviation Training Programs; SD V-29; K220.01 V.17; IRIS No. 01115057; Air Force Historical Research Agency, Maxwell AFB AL, 9 (question #5).

[676] A general consensus for more inclusivity developed, based both on pragmatic grounds that making military aviation more accessible to the population as a whole (including smaller men) was favorable as well as a specific matter of fair access to both genders. Yet resistance to change remained. Interestingly, a group of female officers opposed changing the sitting height design requirement on the grounds that "shrill cries for accommodation" would result in political backlash against women service members because of it; see Weber, "Manufacturing Gender," 243-44. Based on some of the vitriol directed at Representative Pat Schroeder, who was dubbed "Capitol Hill's queen of political correctness" by *Forbes* for her stance on the matter, their concern seems to have been accurate; see Howard Banks, "Pat's Snit Fit," *Forbes* 153, no. 3 (1994): 20. The matter received media scrutiny through 1996, when the trainer was in production and the training requirements were finalized; see "Sit Tight," *Aviation Week & Space Technology* 144, no. 2 (1996): 329-30.

[677] Mintz, "Just Plane Too Big? Challenge to Military Trainer's Suitability for Some Female Pilots Stalls Big Contract," E1.

Wagstaff demonstrate the aircraft at large military air shows throughout 1999.[678] As in the case

of DoD concern over this matter, gender issues did not greatly impact jointness, but rather

witnessed Congress using a strong, ongoing joint project to demonstrate proactive control of a

politically significant issue.[679]

Congress also proved able to *overcome* DoD when it disagreed with procurement oversight

decisions. Deputy Undersecretary of Defense for Acquisitions, Donald Yockey, defied Congress

over some modifications he made to the JPATS acquisition process.[680] Yockey and OSD had

flexed their muscles after most matters of joint concern were settled issues, but just as the

competition to win the contract was heating up. In 1992, Senators Dole of Kansas and Trent Lott

of Mississippi both wrote to Donald Atwood, the Deputy Secretary of Defense, to express

concern about changes in the JPATS acquisition strategy. Lott's letter is particularly ominous in

the micromanagement with which it threatens OSD: "If you continue to allow the acquisition

process to become muddled, inefficient, and more costly, you are [*sic*] will force Congress to

become actively engaged in directing your acquisition strategy. We don't look forward to the

challenge, but we will begin to insert ourselves into your acquisition decision process if you

continue to delay progress, initiate cost increases, and unfairly penalize contractors who are

responsive."[681] Having conjured the joint program from its directive, Congress was now in the

business of controlling it for its own ends. (Atwood's offense was deciding to strip the winning

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[678] Robert Goyer, "Wagstaff to Demo JPATS," *Flying* 126, no. 5 (1999): 36.

[679] ATC officers involved in the JPATS acquisition were acutely aware of Congress' intent, and the Navy became even more interested in the gender issue following the Tailhook convention scandal in 1991; O'Keefe interview, 6 May 2014. Together, both services' action officers divined the congressional intent and provided a way to incorporate it into the program. The "swamp of anthropometry" through which they waded was the challenge of finding a way to incorporate legislative intent into aircraft requirements; Chiabotti e-mail, 6 June 2014. The answer—the inclusion of 'objective criteria' that awarded manufacturers credit for going above and beyond a 'requirement'—served to incentivize competing contractors to increase the percentage of the female population who could be accommodated. It was an elegant solution to a sticky problem that really could not be addressed by the 'requirements' process *per se*; Sladek interview, 13 May 2014.

[680] "Yockey to Defy Congress on JPATS Purchase," *Aviation Week & Space Technology* 137, no. 15 (1992): 24.

[681] Letter to Donald J. Atwood (Deputy Secretary of Defense); SD V-31; ATC Periodic History; K220.01 V.17; IRIS No. 1115057; AFHRA, Maxwell AFB, 1.

aircraft contractor of its ability to select the associated ground-training system and to change the kinds of modifications that would be allowed for 'non-developmental' aircraft.)[682]

Whether it appears explicitly in the Congressional Record or not, individual delegations have an outsized effect on aircraft procurement. While Beech, as a partner of Raytheon, was a winner in the JPATS contract, it did not fare as well in a later competition for a large Air Force contract, and reacted in a way reminiscent of its competitors' challenges in 1995. Action officers at the Air Force's Office of Legislative Liaison would regularly take phone calls from Kansas protesting the "outsourcing of national defense to Brazil" and other charges that sounded unpatriotic, if not treasonous, during the initial selection of the Air Force's Light Air Support (LAS) platform.[683] The LAS is a counter-insurgency aircraft that would be sold or given to countries, such as Afghanistan, that receive assistance from the U.S. Had it gone forward, it would have had a potential contract value of nearly one billion dollars. The company then known as Hawker Beechcraft successfully scuttled a contract originally awarded to Embraer (of Brazil) and Sierra Nevada Corporation (a U.S. government contractor) in 2011 with a protest to the Government Accountability Office (GAO).[684] After restarting the competition, the restyled

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[682] The ATC official history details the controversy; see Manning et al., *ATC History 1992-1993*, 1—Narrative, 151-52. According to Sladek, Congress effectively reversed Yockey's changes: "The winner DID have total responsibility. After selecting Raytheon, we worked with them to define the [ground-based training system] GBTS requirements. Then the [U.S. government] USG issued them a Request for Contract Change Proposal based on the coordinated GBTS package. Raytheon conducted a source selection to pick two of the four GBTS teams. They worked with both of them, then down-selected to one—Flight Safety. Once they were on as a sub[contractor] to Raytheon, then Raytheon had total responsibility. This was the government strategy to have a say in the GBTS selection, but leave Raytheon with the execution;" Sladek e-mail, 28 May 2014. See also "Raytheon Selects Bidders for JPATS Ground Trainer," *Defense Daily*, 29 March 1996, 1; "Two Vie for DoD Training System," *Electronic Engineering Times*, 21 October 1996, 18.

[683] The quote is from an anonymous former action officer in the Secretary of the Air Force's Office of Legislative Liaison (SAF/LL). Ironically, the selection that so angered the Kansas delegation and industrial base was a 'loser' in a previous competition from which Beechcraft benefited: "Born of a failed tender for the U.S. Joint Primary Aircraft Training System (JPATS) in the mid-1990s, the EMB-314 Super Tucano (A-29 in the Brazilian Air Force) embarked on its own success story as a hardened, digitized light attack aircraft;" see Eric. H. Biass and Wesley Fox, "Baseline Aircraft on Steroids," *Armada International* 36, no. 4 (2012): 23.

[684] Daniel McCoy, "USAF Puts Hold on LAS Contract Amid Hawker Protest," *Wichita Business Journal*, 5 January 2012. http://www.bizjournals.com/wichita/news/2012/01/05/usaf-puts-hold-on-las-contract-amid.html.

Beechcraft again lost a 2013 competition to the Embraer-Sierra Nevada partnership, and were also rebuffed in a subsequent GAO protest.[685]

The media that write about this matter of constituent advocacy sometimes refer to it obliquely, but the reality is readily accessible between the lines. During the JPATS contract fight, then-Senate Majority Leader Dole was in the awkward position of "supporting one constituent [Cessna] and slamming another [Beech]" when he wrote a letter criticizing the Air Force's award to the Raytheon-Beech proposal—Beech and competitor Cessna are neighbors in Wichita, Kansas, and the Raytheon-Beech team had recently attained a significant victory by winning the competition to provide the Tanker-Transport Training System (TTTS) aircraft in the form of the T-1 *Jayhawk*.[686] Kansas never leaves its aircraft manufacturers out in the cold for long, though; advocacy later shifted back to Beech, which benefited by being able to develop weapons demonstrations for the AT-6—a candidate for the Air Force's Light Air Support (LAS) airframe—that were "funded by earmarks from the Kansas congressional delegation."[687] Roy Braybrook gave a nod to this form of exogenous influence in noting that Pilatus' development of a high-performance turboprop trainer was because of its desire to not "compete directly with the PC-9-derived, *Washington-backed Beechcraft T-6*."[688] Beechcraft's military division seems always ready to line up at the trough of defense appropriations with congressional help, though

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[685] Molly McMillin, "GAO Rejects Beechcraft Protest," *The Wichita Eagle*, 14 June 2013. http://www.kansas.com/2013/06/14/2847508/gao-rejects-beechcraft-protest.html. The reality of "foreign" aircraft acquisitions is that legislation forces partnership with a domestic producer so that more than seventy percent of the components in any weapons system can be described as 'domestically produced.' In securing the JPATS contract, Raytheon-Beech took steps early on to bolster their 'made in U.S.A.' label despite the foreign origin of their design; see "Beech Boosts JPATS' Domestic Content," *Aviation Week & Space Technology* 138, no. 25 (1993): 81. This proved to be a well-advised move when Cessna, seeking to exploit its all-domestic credential, lobbied to have the usual domestic threshold increased by five percent.

[686] Mintz, "Just Plane Too Big? Challenge to Military Trainer's Suitability for Some Female Pilots Stalls Big Contract," E1.

[687] Robert F. Dorr, "History Mystery," *Air Power History* 59, no. 4 (2012): 64.

[688] Braybrook also made note of Beechcraft's forays into bankruptcy Roy Braybrook, "Trainers, Aviation's *Sine Qua Non*," *Armada International* 37, no. 3 (2013): 47, emphasis added.

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its frequent bouts with bankruptcy suggest it is less able to manufacture economically viable aircraft.[689]

Irrespective of the business models upon which U.S. military aircraft manufacturers might rely, the JPATS legislative history suggests that a practitioner of jointness with knowledge of acquisitions politics can exploit the forces of domestic politics to help cause an inter-strata coalescence of interests. JPATS was so artfully conceived and marketed on Capitol Hill, mostly by its ATC advocates early on, that it received enduring legislative attention. With the initial procurement questions settled and a viable airframe ready for manufacture, JPATS remained popular with congressional appropriators. The SASC, for example, directed additional procurement in the 1997 NDAA, marked up a 2000 appropriations bill with an additional fifty-four million dollars to buy twelve more JPATS aircraft than the administration had requested, and recommended forty-six million dollars in advance procurement.[690] The congressional mark-ups came with explicit language admonishing DoD for alternate uses of the money or attempting to delay trainer procurement.[691] Even when JPATS ran afoul of Nunn-McCurdy requirements for defense contracting cost overruns in 2007, it received prompt recertification and continuation as a program "vital to national defense."[692]

The extensive political attention heaped on JPATS, if read alongside some of the harsher criticisms released by the test community during early development, might lead a cynic to

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[689] Beech and its leadership are certainly not alone in this practice, which seems to escalate with companies' financial challenges. Lockheed, facing dire fiscal straits in 1995, made its cries about unfair selection processes some of the loudest and most dramatic after the JPATS selection went to Raytheon and Beech; see Bill Kinney, "Skinny Times at Lockheed," *The Marietta Daily Journal*, 29 January 1995, 2; "JPATS Criteria Faulted," 1.

[690] Sheila Foote, "Senate Appropriators Add Money for LHD-1 Ship, NMD," *Defense Daily* 202, no. 39 (1999): 1.

[691] "Senate Appropriators Direct DoD to Buy More JPATS," *Defense Daily*, 21 June 1996, 1.

[692] "Department of Defense Releases Selected Acquisition Reports," DoD press release based on Selected Acquisition Reports (SARs) to Congress, 9 April 2007. In 2007, JPATS cost increases were "critical," meaning they had increased from the last existing estimate by more than 25% or the original basis by more than 50%. In 2006, the program was identified as having "significant" increases, which correspond to 15% and 25%, respectively; see "National Defense Authorization Act for Fiscal Year 2006," (109th Congress, 2nd session) *Congressional Record* (2006): 1.

believe that the T-6 was a suboptimal product. In fact, the T-6 is quite good at accomplishing the mission for which it was designed. Though anyone can name their own 'nice-to-have' feature the airplane lacks, all flight training instructors interviewed for this work were unanimous in their assent that it is a good primary trainer. The lack of bells and whistles further suggests that designers limited the requirement creep that had plagued the T-46 and so many other military aircraft. As Sapolsky, Gholz, and Talmadge noted, "[p]rojects require more than desire and friends to succeed. The process cannot be only about politics. No matter how many congressmen feel that their districts got a big chunk of the work, they, too will abandon the project if it cannot serve its assigned missions."[693] The *Texan II,* with a foundation of a well-designed COTS airframe and buoyed along by a rigorous requirements process that held the line on essentials, retained support throughout its political half-life on the basis of its technical merits.

Bottom Line for Theory
As in Chapter 3, a summary of the framing theoretical responses as they apply to the JPATS saga appears in Table 4.2. The biggest appreciation raised by this case study is the outsized effect of exogenous influences, which at once seem to be the impetus and continuance for the successful parts of joint cooperation. A 'lesser' exogenous directive from DoD to conduct joint training seems to have faded. Thus, the organizational, collective goods, and professions barriers to cooperation are in full view via a failed initiative, while the effects of exogenous influence are apparent because the Air Force and Navy overcame all of these things. As in the case of AirLand Battle, JPATS also shows the need for a strong service leader or leaders to carry the banner for jointness without tiring. Exogenous influence can provide momentum and support, even the initial *diktat*, but service action is ultimately required for something joint to happen. Finally, theoretical sources predict the temporary nature of the kind of cooperation exhibited in the

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[693] Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 94.

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instance of the JPATS. When coordination emerges to achieve "well-defined packages of issue-specific goals," coalition-like behavior that exhibits strong appearances teamwork and solidarity accompanies the effort, but "the unity is focused narrowly both *substantively and temporally*."[694] Having used jointness to see off the threat of greater congressional or DoD interference in their aviation training programs, the Air Force and Navy were free to drift apart when other issues arose that absorbed the outsiders' attention and lessened the threat of exogenous involvement.

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[694] Adil Najam, "Getting Beyond the Lowest Common Denominator: Developing Countries in Global Environmental Negotiations" (PhD Thesis, Massachusetts Institute of Technology, 2001), chapter 2, page 39, (emphasis added).

JPATS Observations	
Theory	*Observed Outcomes for Jointness*
Public goods	- Any temptation for free riding quickly overcome by mutual service interests - Acquisition jointness pursued in good faith, overcome by service preference - Training jointness most likely a forced endeavor; did not endure
Organizations	- Fear of losing acquisition autonomy motivated the Air Force to lead process - Effective heresthetic approach by the Air Force got the Navy onboard; good faith partnership and negotiations kept it there - Continual congressional interest applied enduring pressure for cooperation - Outside influence and occasional crises kept the program in the spotlight
Crisis cooperation	- Services exhibited 'fighting' decision-situation dynamics at times on the way to a 'signaling trustworthiness' cooperative interaction strategy in the project overall - Examples of coercion counterbalanced by concessions from both services
Professions	- Desire to shape service identity through service-specific control of primary aviation training
Agency	- Services possessed an information asymmetry with respect to Congress, but rather than use it to mask intentions, early participants waged an aggressive public affairs campaign to build support for the desired program, which was in line with the overall legislative intent
Military Innovation	(Little substantive innovation observed. JSUPT enabler was a return to an earlier training method. Candidate aircraft were modified to win contract, but using common aircraft technology.)
Civil-Military relations	- Congressional dissatisfaction with Air Force program sets the stage for JPATS - Goldwater-Nichols Act and 'jointness' *zeitgeist* are a subtext for all cooperation - The services used the momentum of congressional enthusiasm for joint projects to build support for their preferred brand of jointness
Service cultures	- Service history over aviation and contrasting training cultures made JPATS cooperation without exogenous influence unlikely - Training preferences were never completely resolved; joint training pipelines were relatively short-lived as a result - Sequential acquisition strategy helped to sell Navy on program, but also allowed the loss of economies of scale in production
Defense Department & Joint Staff structures	- DoD figures make several interventions in the program, reflecting their understanding of its prominence and symbolism to Congress - DoD interventions, while garnering publicity, threatened or delayed cooperative programs without substantially improving them - JROC process a key part of approval for the program in the Pentagon, but the responsible service commands again used it to advance their desires, which had been settled among endogenous-level figures
Other Exogenous Factors	- Congressional interest is far and away the biggest cause, driver, and shaper of the JPATS process, interacting at all phases of the program with service preferences

Table 4.2 Theoretical Observations on the JPATS Acquisition and Associated Cooperation

IV. Conclusion: Satisfactory Cooperation, Ongoing Relationships

Though it was a peacetime acquisition project for the most basic of requirements, the JPATS

program on balance is a successful example of joint cooperation. It produced an acceptable result

for both services and resulted in an efficient acquisition that neither service would have

attempted on its own. Navy senior figures interviewed expressed the opinion that the "Air Force

contracting expertise" yielded the Navy a "better training system than we would have obtained

on our own, particularly in regard to the simulators" and other ground-training facets.[695] No one,

from either service, expressed significant misgivings about the airplane produced to meet the

program's requirements, and an overwhelming majority sang its praises as a suitable trainer. It

was easy enough to fly that student pilots would not get overwhelmed in early phases of training,

but had enough power and aerobatic capability to prepare them for advanced training in

specialized aircraft.

As Art pointed out in his analysis of the TFX program, it is impossible to thoroughly

evaluate the T-6 against other alternatives that might have been built.[696] This investigation earlier

acknowledged the fact that joint acquisition kept the Air Force from flexibly examining the

amount of training it wanted to accomplish in its new primary platform, a prohibition that would

have likely led to comprehensive savings for that service. As an Air Force-commissioned RAND

report discussed, factors like these are in part what give joint programs higher cost-growth

characteristics than comparable single-service efforts.[697] JPATS is not a tactical fighter, or even a

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[695] Vandiver interview, 11 April 2014.
[696] Art, *The TFX Decision: McNamara and the Military*, 7.
[697] "An important factor contributing to this joint aircraft acquisition program cost-growth premium is the tension between the need to attain maximum design and system commonality, which is the basis of potential joint cost savings, and service-specific requirements, which tend to reduce commonality;" see Lorell et al., *Do Joint Fighter Programs Save Money?*, 17.

"complex" aircraft for which the report cautions against joint acquisition, but it did exhibit the same kind of high cost-growth numbers typical for joint programs.[698]

Even though objective truth is impossible to deduce from the available data set, it is likely that the JPATS trainer was well suited to the joint mission for which it was designed. Even forceful critics of the services' implementation of their joint training programs conceded that the aircraft itself was sufficient.[699] Once a satisfactory set of requirements debouched from the early, rigorous bi-service process undertaken in the late 1980s and early 1990s, the process to identify the airplane and its manufacturer proceeded down a relatively easy path to completion. Less successful was the experiment in joint aviation training, a late addition from DoD. Though this did yield some good joint exposure for hundreds of students and their instructors, it was never a part of the original motivation for the JPATS, and in fact ran counter to how the services envisioned their partnership proceeding. Though it survived for a time given the momentum that jointness enjoyed in the 1990s, it never had the congressional imperative of the acquisition project. As the services continued to expend energy and money to maintain the program, they quickly identified reasons why it would be easier to revert to independent programs, and a lack of enforcement or oversight from DoD or Congress made it easy enough to slip back into the old habits of training. Questions of airspace, efficiency, and BRAC had subsided, removing any external impetus to keep the most strained part of the relationship intact.

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[698] See, e.g., Michael Sirak, "OSD Defers JASSM Recertification While Reliability Plan Worked," *Defense Daily* 234, no. 47 (2007): 1.

[699] At Whiting Field, instructors were "happy to get a new airplane, and they recognized that, 'Hey, this is an efficient and cheaper way for all of us to get a new primary trainer;'" Brian S. Armstrong (Lieutenant Colonel, USAF; former instructor pilot (1999-2003), Joint Specialized Undergraduate Pilot Training), personal interview with the author, 7 April 2014. The person most forceful in his criticism of the JPATS interviewed in this work allowed that "[t]he plane itself is suitable for training," but brought up the lack of a need to apply rudder (a good skill for the many helicopter pilots who fly it to acquire), beta (a thrust reversing mode that some turboprops have, which allows operation of shorter runways and saves brakes), and a limitation on low-altitude spinning (which hurts the Navy in its relatively small flight training areas); Bartholomew questionnaire, 2 May 2014.

V. Epilogue: Nostalgia for Jointness

There is consensus, both among current instructors and administrators of primary aircrew training, that the "Joint" in JPATS is largely an artifact of a bygone era. To be sure, the joint acquisition program remained successful throughout its life—once purchased, the services are more or less stuck with the platforms they buy through their design life and then some. Congressional attention will likely ensure the Navy completes its commitment to close out procurement, and the most recent Defense Department reports show an image of a mature acquisition program that has neither significant risks nor outlandish cost increases.[700] The joint training part of the initiative did not endure, however. There are no longer training squadrons where Air Force and Navy instructors teach students together and where the primary leadership positions rotate among the services.[701] There are no Navy or Marine Corps students at Vance Air Force Base and no Air Force students at Whiting Field.[702] On the installation where both services do maintain primary aviation training (at Pensacola Naval Air Station, where Air Force navigators and Naval Flight Officers perform initial training), a previous effort at jointness and integration has disappeared, though the services do at least share the same runways.

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[700] See, e.g., the 2013 Defense Department summary of selected acquisitions programs, which listed JPATS as a group of programs being procured at costs below projections; "Department of Defense Selected Acquisition Reports," 17 April 2014, http://www.defense.gov/Releases/Release.aspx?ReleaseID=16644. The last significant risk for JPATS was reflected in the 2012 acquisition report, which identified Hawker Beechcraft's bankruptcy as a "[s]ignificant," but not insurmountable (given a bankruptcy court's approval for the company to continue ongoing manufacturing operations), risk to continued production; see "Selected Acquisition Report: Joint Primary Aircraft Training System (JPATS)." Wright-Patterson Air Force Base OH: JPATS Program Office, 2013, 5.

[701] Ironically, the only current, true 'joint schoolhouse' for aviation training is the F-35 initial training program at Eglin Air Force Base, Florida. However, this arrangement most likely reflects a simple lack of available production aircraft. The Marine Corps plans to transition to its own facilities by March 2015, with all of the services (including the Air Force) standing up additional training facilities to handle their individual and international training requirements; see Arie Church, "Marines Leaving F-35 Joint Schoolhouse," *Air Force Magazine*, 5 June 2014, online resource. http://www.airforcemag.com/DRArchive/Pages/2014/June%202014/June%2005%202014/Marines-Leaving-F-35-Joint-Schoolhouse.aspx; "F-35 Training in High Gear at Eglin," Lockheed Martin, accessed 8 June 2014, http://www.lockheedmartin.com/us/news/features/2014/f35-training.html.

[702] The Air Force abandoned SUNT, reverting back to universal training for Combat Systems Officers (CSO)—the moniker that replaced 'navigator' in the service least hidebound by tradition—and its partnership at Pensacola with the Navy on 2 October 2009 when it activated the 479th Flying Training Group; see Tan, "AF Churns Out Cross-Trained Back-Seat Fliers."

Reflecting their strong sense of ownership in the JPATS program, those who were heavily involved in its incipient and growth stages exhibit a degree of regret for the current vector of primary aviation training. The overall sentiment is bittersweet nostalgia for the jointness manqué. Those who laid the foundations for JPATS and the multi-service training that grew out of it do not fully grasp why their successors have diverged from the carefully laid out road map that would lead to continued economies of scale in aircraft production and early-career exposure to the viewpoints of another service for students. Instructors who taught in those programs tend to differ in their opinions, and they emphasize the difficulty associated with producing a quality graduate from the mixed lines.[703] It does not seem that there are any significant political forces pushing the services back together, though there have been rumors of a congressional investigation into why the Air Force and Navy needed to construct completely different facilities at Pensacola when they had worked together in shared buildings for so long.[704] There are still pilot-instructor exchange programs intact at the original joint pilot training bases, meaning that the first joint aspect of the DoD directive remains extant, but its longevity is questionable.[705]

Viewed as an exercise in heterogeneous engineering, it is possible to trace some of the people and technological artifacts that led to the construction of JPATS. It is considerably more difficult to chronicle its dismantling, though, because responsibility goes unattributed. Official histories rarely record who made a decision to separate service participation in a joint program, for example. The contracting officer who signed the order to paint T-6Bs according to a different scheme than the Air Force has his name recorded for posterity, but the decision was not his, and

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[703] One called JSUPT "a controlled failure" because its objective to feed "numerous and diverse follow-on pipelines was nearly impossible;" Bartholomew questionnaire, 2 May 2014. Another offered that "it really wasn't a natural fit" given philosophical differences between the services about training; Armstrong interview, 7 April 2014.

[704] Bartholomew questionnaire, 2 May 2014.

[705] Eighteen Air Force instructors still work at the Navy's Whiting field, though with the exodus of all Air Force students in 2013, the drive to keep them there may be waning; see "Air Force/Navy Student Exchange Ends at Whiting Field," *Milton Local*, 26 July 2013. http://miltonlocal.com/2013/07/air-force-navy-student-exchange-ends-at-whiting-field/.

is probably untraceable behind a screen of several committee meetings. In short, it is almost always difficult to assign responsibility for the undoing of jointness to specific people. The loss of jointness in primary aviation training resulted not from a flag officer's willful declaration in the wake of an inter-service controversy or a dramatic administrative restructuring. The program bled out its jointness through a thousand cuts. Where 'jointness' had been a rallying cry of the early program, service desires started to hold sway as aircraft began to arrive on the ramps. Different training base commanders began to put their "stamps" on the program.[706] A Navy decision to adopt its traditional orange-and-white paint scheme for trainers began to differentiate the aircraft, and the Navy's T-6B variant created two separate fleets with minor but divisive maintenance differences.[707] Early syllabus disputes that had seemed minor in the early 2000s became a major focus of inter-service dispute, and both services involved began to focus on the extra training (each service found it necessary to institute "top-off programs" for students training at a sister-service base before integrating them into advanced flight training) and additional expense (the Navy had to move students to and from Vance Air Force Base, Oklahoma; the Air Force students had a diversion to Pensacola, Florida, for example) that inhered in joint training.[708]

One cannot help wonder what the state of JPATS today would be if jointness in training in general—and the JPATS in particular—had retained its priority within the exogenous defense establishment. There does not appear to have been a rescission of the 1993-94 DoD directives to execute training jointly, after all. Chiabotti wrote, in describing the benefits of turbojet

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[706] O'Keefe interview, 6 May 2014.

[707] In the early years of the requirements process, ATC and CNATRA personnel had fought to keep the aircraft completely identical, compromising on paint schemes and fighting for *quid pro quo* exchanges that got the Air Force the seat harness it wanted in exchange for the colors on the angle-of-attack indicator favored by the Navy; O'Keefe questionnaire, 5 May 2014. Such labor has been overcome by events, as the T-6B looks quite different from the T-6A, both inside and out.

[708] Armstrong interview, 7 April 2014; DeGarmo interview, 28 April 2014; O'Keefe interview, 6 May 2014; Vandiver interview, 11 April 2014.

propulsion over that provided by a turboprop, that "the physics of rotational mechanics are unrelenting."[709] The spinning components of a turboprop must be tightly bolted together, and the pilot at the controls must make continual adjustment for the spiraling forces that tend to push the system apart centrifugally. The same analogy exists for joint programs and the turboprop-powered JPATS. Pushing services to do something together when there is no obvious internal motivation to do so precipitates a tendency for those programs to fly apart. If no one acts deliberately in a custodial role, jointness will end. Where was the caretaker of joint aviation training after the early 1990s? A major shift in the world security climate occurred in September 2001, just as the first students were about to start training in the T-6, requiring DoD to focus less on training and more on combat. That would-be guarantor of jointness most likely had its attention and gaze fixed first on Afghanistan, then on Iraq. The tyranny of the urgent siphoned off the energy that had once gone to keep JPATS joint. The next case study returns this investigation to the realm of combat and partially helps explain why JPATS, like AirLand Battle, only had temporary sway in creating jointness within its realm of influence.

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[709] Chiabotti, "'Heterogenius' Engineering and JPATS," 272.

DEVELOPING AIR POWER CAPABILITIES IN SUPPORT OF GROUND UNITS:
THE CRUCIBLE OF COUNTER-INSURGENCY, 2001-2012

As General Starry pointed out, one fact of life is not likely to change by the year 2000: the Soviet Union will still be the threat—either directly or through surrogates.[710]

General Wilbur Creech, U.S. Air Force
October 1981

*The Navy and Marine Corps fighter pilots routinely flew as low to the ground as they could to achieve the effects, even when it was below what was deemed minimum safe distance. They were **terrific**. The Air Force had to work through airspace management—aircraft were stacked up to the ceiling and could only be flown in, in* [sic] *a few numbers.*[711]

Major General Franklin Hagenbeck, U.S. Army
June 2002

I. Introduction & Background
A. Counter-insurgency (COIN) and direct air support to ground forces

Having viewed two peacetime facets of the flawed gem that is inter-service cooperation, this

chapter turns over a side cut and polished by actual war. This chapter focuses on specific air-

power capabilities that support ground combat. In contrast to the AirLand Battle concept of

Chapter 3, the context for cooperative effort shifts from a broad, unconstrained, and hypothetical

battlefield in which the military faced anticipated peer competition from the Soviet Union. The

focus here is on fighting together in a type of combat labeled variously as *asymmetric war*, *low-

intensity conflict*, *small wars*, *counter-insurgency (COIN), security and stability operations,* or

guerrilla war. The comment above from General Wilbur Creech, who for six years supervised

the Air Force's battlefield support provided to the Army under the context of AirLand Battle, is

representative of U.S. military strategic preference.[712] His words are characteristic of senior

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[710] Air-Land Battle of the Future; Personal notes for a speech to the Association of the U.S. Army; Records of General Wilbur L. Creech, Commander, Tactical Air Command; IRIS No. 01126108; Air Force Historical Research Agency, Maxwell AFB AL.

[711] Emphasis in original; quotation is from an interview published in Robert H. McElroy and Patricia Slayden Hollis, "Afghanistan: Fire Support for Operation Anaconda," *Field Artillery*, September-October 2002, 7-8.

[712] General Creech commander Tactical Air Command from May 1978 through December 1984; see "U.S. Air Force Biography of General Wilbur L. Creech," Department of the Air Force, accessed 23 October 2013.

military figures' expectations—or at least the realm in which they are comfortable planning—

when devising peacetime strategic plans: they devise a response to an advanced, technologically

comparable enemy that holds at risk essential U.S. interests. Anticipated conflict therefore

involves major combat operations (MCO), and avoids uses of force that fall along the spectrum

of conflict characterized by greater political restraint.[713, 714] Creech's prediction, inaccurate

though it was in describing the conflict the U.S. military would wage at the beginning of the

twenty-first century, reflects sentiment shared by many civilian government leaders and

strategists.[715] The military services, forced against expectations to perform COIN warfare in

Afghanistan and Iraq, had to rediscover dormant habits and competencies in order to be relevant

and effective in the context of these conflicts.

James Corum and Wray Johnson, summarizing their analysis of air power used in COIN

conflicts, drew the following conclusions:

1) The support role of air power is the most important and most effective mission in a
   COIN conflict;

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[713] See, e.g., Builder, *The Masks of War*, 138. For an example of executive-level instructions of the same flavor, see Comprehensive Net Assessment 1978; attached to Memorandum from Brzezinki to Carter, 30 March 1979, "Subj: NSC Weekly Report #92"; Weekly Reports, 91-101 (Box 42); Zbigniew Brzezinski collection; Jimmy Carter Library, Atlanta.

[714] The "range of military operations" (ROMO) is Pentagon jargon reflecting the Clausewitzian idea that war is "a true political instrument, a continuation of political intercourse, carried on with other means." Clausewitz, *On War*, 87. In some cases, the act of war is more constrained by politics than in others. Current U.S. joint doctrine describes use of the four instruments of national power (diplomacy, economic influence, information, and the military) across a "conflict continuum" ranging from peacetime to all-out war. The military instrument of power, in this construct, may be employed on the continuum across a range that includes "major operations and campaigns" (corresponding with war) through "crisis response and limited contingency operations" (somewhere in the middle) to "military engagement, security cooperation, and deterrence" (corresponding with peace). See "Joint Publication 1: Doctrine for the Armed Forces of the United States," I-14.

[715] See Michael Carver's description of "flexible response," a strategy that anticipated a war with the Soviet Union in continental Europe, featuring a "forward defense" of conventional forces backed by a graduated nuclear response; Michael Carver, "Conventional Warfare in the Nuclear Age," in *Makers of Modern Strategy from Machiavelli to the Nuclear Age*, ed. Peter Paret (Princeton NJ: Princeton University Press, 1986), 786-87. Such imagined conflict dominated strategic thinking from the 1960s through the 1980s. In the same volume, the sole mention of politically constrained war anticipates conflict on the basis of political or economic unrest; it did not foresee the rise of radical Islam as a root cause of COIN warfare; see John Shy and Thomas Collier, "Revolutionary War," in *Makers of Modern Strategy from Machiavelli to the Nuclear Age*, ed. Peter Paret (Princeton: Princeton University Press, 1986), especially 816-17.

2) COIN wars are intelligence-intensive, meaning that knowledge of where small bands of guerilla fighters hide and the coordinating of such information among different military and civilian agencies is essential; and

3) Effective joint operations are essential for the effective use of air power; again, the cooperation must occur among both the military services but must also involve other agencies involved in the overall COIN effort.[716]

The characteristics of the Afghan and Iraqi conflicts—which this case study will refer to, respectively, as Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF)—underline the above conclusions.[717] Both wars witnessed ground forces' heavy reliance on CAS and airborne surveillance, and they featured military strategies enabled by detailed intelligence of the type described by Corum and Johnson. These two specific air power applications played important roles in these COIN wars, and their effectiveness was dependent on the degree of joint cooperation that occurred. CAS and UAV-enabled ISR are thus indicators of cooperation and germane topics for exploring jointness.

There is a checkered history of 'jointness' in the area of direct air support to ground operations, one that has been evident during COIN conflicts as well as conventional wars. Both CAS and the provision of intelligence to ground units via air power have suffered similar

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[716] This list is excerpted from a list of 11 conclusions about air power in COIN warfare; James S. Corum and Wray R. Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists* (Lawrence: University Press of Kansas, 2003), 427, 34, and 33. The remaining conclusions stress the need for a comprehensive strategy, the importance of high- and low-tech methods, the counter-productivity of bombing civilians, the need for air strikes as the war becomes more conventional in nature, the flexibility air power offers the prosecuting COIN force, the long duration of most COIN wars, and the need for more U.S. training in COIN warfare's unique skills.

[717] Operation Enduring Freedom was a U.S. government "umbrella" name for several post-9/11 operations. The campaign in Afghanistan was officially Operation Enduring Freedom-Afghanistan (OEF-A), contrasting with separate operations in the Philippines (OEF-P) and the Horn of Africa (OEF-HOA). OEF-A is technically distinct from the efforts of the International Security Assistance Force (ISAF), a NATO-sanctioned effort in Afghanistan. Because this chapter focuses on U.S. efforts in Afghanistan, for simplicity it will refer to the totality of those efforts as "OEF," though some overlap in the capabilities discussed here existed in NATO forces in ISAF, and U.S. forces participated in ISAF operations. The name "Operation Iraqi Freedom" is somewhat less ambiguous; it refers to the military activities of a coalition led by the U.S. and U.K. in Iraq to overthrow the Saddam Hussein regime and then provide stability to the war-ravaged nation. OIF, which began on 20 March 2003 with the invasion of Iraq, formally ended with the transition to Operation New Dawn on 1 September 2010; "Operation New Dawn." Baghdad, Iraq: U.S. Forces-Iraq, 2010. U.S. military involvement in Iraq formally ended 15 December 2011; Tim Arango and Michael S. Schmidt, "Last Convoy of American Troops Leaves Iraq, Marking a War's End," *The New York Times*, 19 December 2011, A6.

historical neglect. Since the specific capability of UAV-enabled ISR (UAV-ISR) is a relative

latecomer to combat, it entered the story further along the timeline, but Air Force behaviors in

the development and fielding of UAVs exhibit the same reluctance found in the provision of

CAS support to Army missions. There exists a repeated pattern of Air Force-Army interaction:

the former has demonstrated a consistent lack of enthusiasm to support the Army with air power

assets that are 'organically' apportioned to individual units and answer to a ground commander's

control, instead favoring a 'centralized' command-and-control scheme whereby an Airman with

responsibility for an entire theater of war sets priorities for the use of air power assets. This trend

sets the context for the cooperation—and occasional lack thereof—that is the focus of the case

study.

Both the assertions of habitual air-ground support patterns as well as their observation in

this case study demand quite a bit of evidence. The former is an area of chronic thrust-and-parry

maneuvers between the Army and the Air Force. With respect to the latter, the historical record

for OEF and OIF has not ripened long enough to inspire a consistent interpretation. Therefore, in

addition to this chapter, Appendix A provides expanded historical background and contemporary

evidence for the attendant set of assertions.

B. Themes of this Chapter
The broad finding of this chapter is that the military services, especially the Army and Air Force,

increased their capability to use air power in direct support of ground forces during OEF and OIF.

Though such cooperation is a classic example of combined-arms jointness, the extent and quality

of cooperation observed fell far short of an ideal because it faced serious cultural and

bureaucratic obstacles throughout the duration of the conflicts. The increased cooperation arose

in response to the security crises the U.S. military faced in Afghanistan and Iraq after 11

September 2001, an exogenous stimulus with dramatic visibility. Both wars begun as an enraged

America struck out against a host of entities it deemed a threat to its interests because of their support for terrorism. The conflicts in each country followed a broad pattern that witnessed the removal of an entrenched regime as the first stage of conflict, opening steps that fall closest to MCO on the spectrum of conflict. After the opening moves, however, both conflicts witnessed the U.S. and its allies having to contend with the difficulties of power vacuums in the countries they had invaded. After the displacement of the Taliban government in Afghanistan and the toppling of Saddam Hussein's regime in Iraq, nascent insurgencies began to threaten long-term U.S. goals.

In addition to the paramount interest of removing safe havens from which terror organizations could launch attacks, a secondary concern became the establishment of peaceful, democratic governments in the wake of deposed regimes. To address burgeoning sectarian anarchy and tribal warfare in both countries, later military efforts focused on destroying the elements deemed harmful to stability while helping rebuild national institutions that could maintain order. The plan for operations in both countries attempted to isolate and reduce the influence of terror organizations and uncooperative warlords, struggles that typify COIN warfare. While operations at this end of the spectrum of combat have not been historical favorites of either service, in this case the Army embraced the concept more quickly than did the Air Force.[718]

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[718] As evidence for this conclusion, consider in part a comparison of the two services' academic journals. *Military Review* and *Air and Space Power Journal* (formerly *Aerospace Power Journal*) are wide-audience publications released by the professional military education centers of the Army and Air Force, respectively. By 2005, *Military Review* had added "counter-insurgency" as a topic heading in its annual research guide and ran over a dozen articles with the term in the titles. By contrast, the first *ASPJ* article about the topic appeared in 2006. Ironically, it lamented that the Air Force failed to embrace any meaningful doctrine about the topic; see Kenneth Beebe, "The Air Force's Missing Doctrine," *Air & Space Power Journal* 20, no. 1 (2006). Beebe's article appeared in a regular forum designed to offer contrasting views over controversial or emerging ideas, usually accompanied by a contrasting viewpoint in the same issue or one that soon followed. His editorial went uncontested. The first serious discussion of COIN air power appeared in *ASPJ* in late 2006; see Howard D. Belote, "Counterinsurgency Airpower: Air-Ground Integration for the Long War," *Air & Space Power Journal* 20, no. 3 (2006). This article was followed in short order

Two of the most notable advances during this period were air power specialties of

particular use in COIN warfare: close air support (CAS) and surveillance by unmanned aerial

vehicles (UAVs). UAVs, whose nascent capability had shown promise in previous conflicts, yet

struggled for decades to find a suitable 'home' in the U.S. military, became an entrenched part of

military air power during this era. A confluence of endogenous, meso-organizational, and

exogenous factors contributed to overcome this and other barriers to jointness. For the Air Force,

this provision of support created conflict with respect to one of its most dominant doctrinal

preferences, a concept the service calls 'centralized control,' the organization of all air power

capability under a single commander. Cultural conflicts of this kind had to be confronted to

realize the level of joint cooperation eventually observed. In all the examples examined, the

actions of individuals were decisive in overcoming obstacles, though temptation to revert to non-

joint habits became evident over long years of conflict.

The increase in COIN air support capability was especially evident in areas of materiel,

technology, and training. During the two extended MCO-*cum*-COIN conflicts that ushered in the

first decade of the 2000s, substantive improvements in CAS and (later) UAV-ISR capacity

developed during persistent armed conflict. It was motivated, in part, by the threat of failure,

injury, or death that confronted the soldiers, sailors, airmen, and marines charged with executing

U.S. security strategy under conditions of enduring combat. A principal observation from this

case study is that the high-threat nature of war drives cooperation where many other mechanisms

fail.[719] The characteristics of a wartime military and the challenges it faces are, in the parlance of

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by Charles Dunlap's, which complained that Army and Marine Corps COIN doctrine was insufficiently "air-
minded," see Dunlap, "Air-Minded Considerations for Joint Counterinsurgency Doctrine," 63.

[719] In accord with crisis cooperation literature, this work deliberately uses 'high-threat' to describe the context of
COIN air power inter-service interactions. While from a fighter's perspective on the battlefield, the need for air
support is almost always 'urgent,' i.e., reflecting finite time in which decision makers are able to respond to the
situation, from an institutional perspective the means and methods of providing it are less so. The situation remains
'high-threat' from both perspectives, though for very different reasons, and not necessarily the life-and-death

technological history, a perfect opportunity for "heterogeneous engineers" to disrupt the *status quo* and create new technological systems.[720]

Even with the forcing function of combat creating positive inputs, significant obstacles to jointness also emerged. Command and control remained problematic throughout the era of study, but especially in transitioning from an MCO effort to a protracted COIN struggle. The Army and the Air Force, after a notable breakdown of joint coordination early on in the Afghan conflict, reacted swiftly to correct some of the command-and-control measures that had fallen into disuse during peacetime years. Evidence suggests that the Air Force continued to exhibit reluctance to support ground missions and that interpersonal dynamics often interfered with efforts to make air power more responsive in a COIN fight. Prospects for the air support of a ground force that marks a successful COIN effort thus remain in doubt for future conflicts.

Differing views of the nature of the armed conflicts in Afghanistan and Iraq competed in the minds of component commanders, creating discontinuities of strategic aim. The split occurred between the exogenous level of the defense hierarchy, with the services (endogenous) and joint organizations (meso-organizational) at times out of sync with the Department of Defense and higher executive branch (exogenous). The services, Joint Staff, and combatant commanders in the first two levels viewed the armed conflicts as significant crises, while the Department of Defense initially adopted a "business as usual" attitude about ongoing military

choices that present themselves to individuals on the battlefield. Rather, services perceive threat when their fundamental interests are challenged, and the Air Force has historically experienced constraint (in the form of congressional inquiry) when some perceive its CAS support to the Army as substandard; see Svedin, *Organizational Cooperation in Crises*, 19-20.

[720] See Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," 113. The usage here is similar to that of Chapter 4. The term 'heterogeneous engineer' is associated with Thomas P. Hughes' view of technological advance as a matter of systems stabilization, which contrasts with a social constructivist viewpoint. In a purely systemic view, the many components at play can have equal effect on bringing closure and stabilization to technological advance; in the social constructivist view, the social aspect is 'privileged' and dominant. See Thomas P. Hughes, "The Evolution of Large Technological Systems," in *The Social Construction of Technological Systems*, ed. Wiebe E. Bijker, Thomas P. Hughes, and Trevor J. Pinch (Cambridge MA: The MIT Press, 1987), 64-66; Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," 133.

affairs, and only later ascribed more urgency to the conflicts.[721] In general, congressional

attention went solely to technology in the form of acquisitions programs, with little focus on

military cooperation *per se* or even warfighting effectiveness. Exogenous dithering and

inconsistency with respect to strategy resulted, which presented a paradox that affected jointness.

The paradox was rooted in U.S. preferences about the use of force, which may have exacerbated

the conflict between the Air Force and Army about how best to support ongoing operations with

air power.

In addition to this strategic inconstancy, the refusal of certain senior service leaders to

compromise on questions of doctrinal preference acted as another hindrance to jointness. For

significant portions of the conflicts in question, a failure to adapt command-and-control

structures to the military operations occurring in Afghanistan and Iraq caused high-level inter-

service strife. A second paradox arose, this one with regard to how best to structure command

and control of joint forces to meet the operational requirements of COIN. These disagreements in

turn made the application of air power in a combined-arms effort less efficient than it might have

otherwise been. That these threats were later overcome by different individuals occupying the

same offices as the conflict wore on speaks to a major conclusion of this chapter and of this

study: the role of individual actors—at any level of the political-military bureaucracy—is

important to the success or failure of joint endeavors. "Who leads matters" in crises, whether

fighting on a battlefield, establishing command-and-control systems, or providing clear direction

about military strategy.[722]

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[721] This characterization is from John P. Jumper (General (ret.), USAF; former Chief of Staff (2001-2005), U.S. Air Force), personal interview with the author, 16 December 2013. For more of General Jumper's comments on the discontinuity between DoD and the rest of the defense establishment, see section III of this chapter as well as Chapter 6.

[722] The quoted phrase is from Margaret Hermann et al., who described a "predominant leader," a single individual who acts as a unitary decision-making entity and has, "with respect to the problem being confronted, the power to make a decision that cannot be readily reversed," and to whose leadership style situational outcomes are particularly

C. Counter-Insurgency (COIN) Summary and the Role of Air Power in COIN
1. COIN and Its Approaches
Rarely do relations among human beings result in what could be termed 'total war,' but since

1945, the U.S. military has found itself confronted with a blurry picture of conflict that muddles

wartime and peacetime considerations. Appendix A shines a spotlight on this dilemma, but the

key points are as follows:

1) The U.S. military, contrary to its cultural preferences and a broader trend of American strategic preference, frequently finds itself involved in conflicts that fall short of full-scale war;

2) COIN, including the operations waged in Afghanistan and Iraq beginning in 2001 and 2003, respectively, mostly inhabits this realm of low- to mid-intensity conflict;

3) There are two approaches to waging COIN; the *direct approach* is annihilative and aligns better with U.S. strategic preferences, but the *indirect approach*, a more subtle strategy of separating combatants from a neutral civilian population, has met with more historical success.

During the period of interest to this case study, the U.S. military found itself fighting conflicts of

a type which it does not relish, all the while debating the philosophies and means best used to

wage them.

2. Case-Study Focus on COIN Air Power
OEF and OIF together constitute an extremely large body from which to draw observations. To

limit the scope of material to a tractable level, this chapter focuses on the air-support missions

used in the COIN conflicts in Afghanistan and Iraq that began for the U.S. in October 2001 and

March 2003, respectively. The capabilities selected for attention are CAS and medium-altitude

UAV operations.[723] With respect to UAV operation, the study focuses on support they provided

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sensitive; Margaret G. Hermann et al., "Who Leads Matters: The Effects of Powerful Individuals," *International Studies Review* 3, no. 2 (2001): 84. Though the authors applied this description to political and diplomatic leaders who make decisions on behalf of nations and societies, here it is particularly apt in military circles, where flag officers have remarkable latitude to represent their services, especially when it comes to inter-service relations.
[723] 'Medium-altitude' is a term with soft meaning. In many Air Force tactical publications, 'medium-altitude' refers to flight between 10,000 and 45,000 feet above mean sea level (MSL). Other references to relative altitude are highly dependent on aircraft. For instance, 'low-altitude' means something quite different to a helicopter pilot than an F-16 pilot. Most medium-altitude UAVs operate somewhere between 10,000 and 30,000 feet MSL.

to fielded ground forces, which started out mostly as observation and intelligence, growing over time to include the release of bombs, bullets, or other ordnance usually associated with CAS.

A word about the label 'COIN air power' is in order here. While this chapter emphasizes the role of specific air power capabilities that often appear in COIN conflicts, it is true that these capabilities are also stock missions in conventional wars.[724] 'COIN air power' is convenient shorthand that captures the missions in their most recent context of the Afghan and Iraqi conflicts, but applies the term generally to all COIN conflicts since the advent of powered flight. In describing the development of these missions, though, it is necessary to acknowledge their application in 'regular' wars. The trends observed across the spectrum of conflict are important in assessing the likelihood of inter-service cooperation in the COIN context. Since this case study examines cooperation in specific types of air power missions appearing in both conventional wars and conflicts of a more limited scope, the historical background provided in this chapter (and the related Appendix A) describes conduct of these missions in all types of war before the latter part of the chapter focuses on the COIN aspects of OEF and OIF.[725]

a) CAS: Close Support to Ground Troops from Aircraft
CAS is a military term of art that refers to delivering bombs, bullets, or even simple noise from aircraft flying close to friendly ground forces—so close that their operations need to be tightly

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[724] Clausewitz noted that no war is "an isolated act." While he posited that war is by its inherent nature an effort to disarm an enemy with the utmost possible use of force and with no limit to the violence used to do so, he also argued that political realities always stop war from approaching these extremes; Clausewitz, *On War*, 76-78. COIN conflicts like the U.S.-NATO effort in Afghanistan, viewed from a Clausewitzian perspective, have more political constraints applied than did WWII. Neither conflict, however, was the unadulterated violence that the concept of "absolute" war would suggest.

[725] Conversely, the chapter does not discuss *all* the missions that typify COIN conflict. For example, Corum and Johnson discuss the importance of airlift operations to COIN conflicts; Corum and Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists*, 427. Military airlift is essential in all modern conventional and small wars. This study does not make it a focus, mainly because senior leaders interviewed indicated that joint conflict over tactical airlift was muted and disputes quickly resolved with compromises between central control and organic scheduling of theater airlift assets; Stephen A. Lorenz (General (ret.), USAF; former Commander, Air Education and Training Command (2008-2011); former Deputy Assistant Secretary of the Air Force for Budget (2001-2005)), telephonic interview with the author, 16 December 2013.

coordinated as a battle unfolds.[726] This coordination in contemporary conflicts, barring an

emergency, comes from expert tacticians who have received detailed training in helping pilots

find and attack their intended targets while avoiding unintentional harm of friendly forces.[727]

These experts are called "Joint Terminal Air Controllers" (JTACs) in current U.S. and NATO

military jargon, and they communicate with airplanes while embedded in ground units or while

they themselves fly over the battlefield in an aircraft with special sensor and communications

capabilities.[728]

Close air support performed by the U.S. military sets the pattern for the inconsistency

observed across the military in all proficiencies relevant to COIN: the services are generally

weak at the beginning of any new conflict, then go through a period of development that causes

proficiency and technology to rise to an acceptable and effective level. The final part of the

chapter will examine how the CAS mission conflicts with the Air Force's culture and

foundational doctrines.

2. ISR: Observing the Battlefield from Above
Another mission set that waxes in wartime and becomes less of an institutional focus for air

forces in peace is the act of observing the close battlefield from a high vantage point.[729] The

military services collectively refer to information gleaned about the areas in which they are

operating or will operate as 'intelligence, surveillance and reconnaissance' (ISR). The ubiquitous

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[726] See JP 3-09.3, p. ix, for the official U.S. military definition of CAS: "Close air support (CAS) is air action by fixed-wing and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces, and requires detailed integration of each air mission with the fire and movement of those forces."

[727] Current "Joint Doctrine," the military establishment's name for philosophy and procedures that apply to all services, and frequently participating allies, uses the term "JCAS." The "J" stands for "Joint," emphasizing that all four services participated in what became a finely honed procedure as the wars in Afghanistan and Iraq reached maturity.

[728] CAS controllers who themselves fly over the battlefield are called Forward Air Controllers (Airborne), or FAC(A)s, and rarely take on the JTAC mantle. Both JTACs and FAC(A)s have a common skill set, though, in that they can provide the critical clearance for an aircraft to expend ordnance in close proximity to ground troops.

[729] A remark from General Robert T. Marsh captures this general sentiment ("recce" is short for "reconnaissance"): "Tactical recce is like electronic warfare—when we're at war, everyone wants it, but in peacetime, nobody wants it;" Robert T. Marsh (General (ret.) USAF; chief of the Air Force Systems Command Reconnaissance/Strike organization), personal interview with Thomas P. Ehrhard, 19 April 1999.

acronym 'ISR' refers to both the information itself as well as the means and acts of gathering it. The scope of the enterprise is vast, encompassing several sub-specialties. U.S. doctrine defines geospatial intelligence (GEOINT), human intelligence (HUMINT), and signal intelligence (SIGINT) as three among seven major intelligence disciplines. Another four subspecialties, including imagery intelligence (IMINT) and electronic intelligence (ELINT), round out the total eleven so-called 'INTs' listed in the authoritative doctrinal publication.[730] To sluice the torrent of activity and information into a manageable stream, this chapter will focus on a narrow band of ISR activity that deals with gathering information from airborne drones, most often referred to as 'UAVs' by the military.[731] Originally the first military application of aircraft (and the reason why the first airplanes belonged to the U.S. Army's Signal Corps), observation, reconnaissance, or other forms of intelligence gathering have long been conducted from dedicated aerial platforms.[732] This study concerns itself with the use of unmanned platforms to accomplish these tasks. More importantly, in the Afghan and Iraqi conflicts, ground forces grew increasingly dependent on the ability of UAVs to provide a real-time picture of the territory for which they were responsible.

Although serious work on unmanned aerial platforms was underway as early as the end of World War II, the role of UAVs in accomplishing battlefield reconnaissance in the form it exists

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[730] "Joint Publication 2-0: Joint Intelligence," (Washington DC: Joint Chiefs of Staff, 2013), B1-B9. UAVs can participate in any number of these intelligence specialties, and, as discussed later in the chapter, also provide kinetic strike capability. The overlapping capabilities of "CAS" and "ISR" platforms have led to debate about how intelligence functions and traditional combat operations should be controlled in theaters of war. Though his work is beyond the scope of this study, Bryan Callahan has described the constraints on ISR command-and-control systems and offered a recommendation for combining both strike and ISR assets into a central, unified structure; see Bryan Callahan, "The Limits of Airpower in Information-Dominant Warfare" (Master's thesis, School of Advanced Air and Space Studies, 2013).

[731] Ehrhard's dissertation provides a summary of usage of contemporaneous terms to describe lift-dependent air vehicles that fly without human occupants, including "drones," "remotely piloted vehicles (RPVs)," and UAVs. UAV remains the most common acronym in general use; see Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," vi-vii.

[732] Alfred F. Hurley and William C. Heimdahl, "The Roots of U.S. Military Aviation," in *Winged Shield, Winged Sword: A History of the United States Air Force*, ed. Bernard C. Nalty (Washington DC: Air Force History and Museums Program, 1997), 4-5.

at this writing did not evolve until Vietnam, and even then remained quite primitive. Ehrhard's authoritative history of UAV development showed that the Air Force flew approximately 3,500 combat UAV reconnaissance sorties in Vietnam.[733] After a period of remarkable innovation, institutional forces and technological limitations conspired to put an effective stop to UAV development until the middle of the 1990s. Since then, however, the platforms and their capabilities have become ubiquitous on American battlefields, and their impact on combat today is undeniable.

As the remainder of this chapter will show, UAV-ISR support to ground forces shares many of the same characteristics that make CAS a source of tension between the Air Force and ground forces in general. The tension, as with the CAS mission, is especially palpable with the Army, for which the Air Force has statutory ground-support responsibility.[734] As with CAS platforms, the Army has pursued its own UAV-ISR fleet after complaints that the Air Force inventory and apportionment schemes did not meet combat requirements in COIN wars. Just as the Army prepares for war with overwhelming firepower, it would like to have a complete view of all intelligence relevant to that battlefield, down to the last square inch of terrain. As with CAS aircraft allocation, the demand for ever-more streaming UAV 'feeds,' able to show enemy movement near remote outposts in the Afghan wilderness or around the next corner in a hostile Iraqi city block, has led to an insatiable appetite for the aircraft and systemic support that provide full-motion video.

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[733] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 494.

[734] Technically, mention of CAS does not appear in *The National Security Act of 1947*. Instead, a policy paper approved by President Harry Truman (effectively implementing the Key West accords) mandated "close combat and logistical support" of the Army by the Air Force; Everett Pyatt, "Save the A-10: Give It to the Army," *Real Clear Defense*, 22 January 2014. http://www.realcleardefense.com/articles/2014/01/22/save_the_a-10__give_it_to_the_army_107047.html. The origins by which the Air Force would provide the close combat support was a promise by General Carl Spaatz to General Dwight Eisenhower to establish a Tactical Air Command following WWII; see Davis, *The 31 Initiatives*, 9.

Before beginning the historical narrative in earnest, it is worth noting the great degree of overlap between aircraft described as 'CAS platforms' and those described as 'ISR platforms.' Though distinctions were fairly clear even as late as 2004, the ability of all aircraft to perform multiple missions clouds the matter and can lead to confusion. For example, since 2001, U.S. UAVs have had some capability to fire missiles or drop bombs, giving them a "hunter-killer" capability that complements their role gathering ISR over the battlefield.[735] Fighter aircraft tasked to perform CAS have developed more elaborate and capable suites of sensors that allow them to observe areas of interest for ground commanders, sharing their live video feeds *à la Predator*. Hundreds of fighter pilots have spent thousands of hours examining roads, urban blocks, and mud-walled compounds for suspicious activity while flying over Iraq and Afghanistan when no immediate need existed for their aircraft's CAS services. The Air Force labeled this role 'non-traditional ISR' (NTISR), and many an aircrew groaned inwardly upon learning that an upcoming sortie was scheduled to be another six hours examining with her aircraft's targeting-pod "soda straw" one of the main supply routes she had watched so many times before.[736]

The blurring of fixed-wing CAS and UAV capabilities became complete in 2008 with the revelation that the Army had stood up an aviation brigade cobbled together from its own complement of UAVs, along with some modified Beech C-12 aircraft that provided live video

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[735] The MQ-9 *Reaper*, given the ability to carry an ordnance payload from its inception, received the designation "hunter-killer UAV" from the Air Force; see, e.g., John Keller, "MQ-9 Reaper Hunter-Killer UAV to Receive Electro-Optical Targeting Systems from Raytheon in $50.2 Million Contract," *Avionics Intelligence*, 27 October 2013. http://www.avionics-intelligence.com/articles/2013/10/ai-reaper-targeting.html.

[736] Vanessa P. Mahan (Major, USAF; F-15E & EA-6B Weapons System Officer), telephonic interview with the author, 13 December 2013. The sentiment is common among fighter aircrew: for every mission that catches insurgents in the act of placing an IED to harm friendly ground forces, it seems like hundreds result in an intelligence debrief report of "NSTR," or "nothing significant to report," fighter slang for a slow day on the job. The term "soda straw" referenced refers to the narrow field of view afforded by a high-resolution targeting pod. The resolution is high, but the picture is constrained.

coverage similar to that of UAVs.[737] Called Task Force ODIN (for 'observe, detect, identify,

neutralize'), the unit's aim was to counter the plague of improvised explosive devices that made

the two theaters so deadly for COIN ground forces. A similar effort started in Afghanistan, and

the Defense Department mandated that the Air Force purchase and operate some fifty MC-12

Liberty aircraft. The *Liberty* is a manned, fixed-wing, propeller-driven ISR platform that had the

effect of increasing the full-motion video feeds that UAV orbits provided while the Air Force

continued to grow its capacity in that area.[738]

3. The Relevance of CAS and ISR to COIN Warfare
In brief, CAS and airborne ISR—whether provided from UAVs or a manned platform—have a

special relevance to COIN warfare. Part of the reason COIN is an intelligence-intensive endeavor

is that success requires detailed knowledge of local populations. Ground forces speak of

"patterns of life," a normal routine of village or city life that, when interrupted, gives warning of

nefarious activity or impending attack.[739]

COIN, if pursued via an indirect approach, must also be discriminate and precise in its

application of firepower. COIN ground forces should be close enough to the population that they

can determine good from bad intent, in clues sometimes as nuanced as mere body language or

tone of voice. When a reason to use force arises, ground forces must do so with care lest they

hurt or punish an innocent person or family. Getting it wrong can lead to a growth of pro-

insurgency sentiment. The inhospitable terrain of Afghanistan and Iraq, as well as the

unfavorable 'optics' of occupiers using heavy ground-serviced weapons, makes air power a

preferred choice to serve as a source of precise, on-call firepower.

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[737] See, e.g., Thom Shanker, "At Odds with Air Force, Army Adds Its Own Aviation Unit," *The New York Times*, 22 June 2008.
http://www.nytimes.com/2008/06/22/washington/22military.html?pagewanted=2&_r=0&partner=rssnyt&emc=rss.
[738] Robert M. Gates, *Duty: Memoirs of a Secretary at War* Kindle ed. (New York: Alfred A. Knopf, 2014), 131.
[739] See, e.g., Walter Pincus, "Airborne Intelligence Playing Greater Role in Irregular Warfare," *The Washington Post*, 28 April 2009. http://www.washingtonpost.com/wp-dyn/content/article/2009/04/27/AR2009042703672.html.

These conditions meant that 'always-on' ISR systems, coupled with CAS provided from all kinds of aircraft, gave a COIN ground force commander the best chance for success in pursuing an indirect strategy. Appetites for full-motion video, both to analyze patterns of local activity as well as to ensure the safety of ground forces against attack, grew alongside a larger deployed COIN force. The desire to have air power overhead, even when no specific operation was ongoing, reached a similar fervor because of the unpredictability of insurgent attacks.

The upcoming historical narrative explains the role of CAS and, albeit to a lesser extent, the use of UAV-ISR technology in the wars the U.S. has fought since the early twentieth century. This process-tracing outline provides both the context for and understanding the mechanisms of cooperation in the most recent COIN conflicts.

D. Air Support to Ground Forces: A Historical Dilemma

Since flight became a part of the human experience, it has had military application. The original use of aviation was observation, first from balloons and then using powered, heavier-than-air vehicles. Aircraft first scouted enemy positions and then enabled spotting functions to rapidly re-aim artillery fire with better precision. As capabilities advanced in the age of powered flight, military pilots realized the utility of dropping ordnance from their craft and outfitting them with forward-firing weapons. This gave way to all flavors of ground attack, including harassment of enemy formations, interdiction of front-bound supplies, and the notion of deep attacks against strategic industrial or population centers. Soon after military aviation gained an offensive capability, aircraft from opposing forces began to attack each other, both in the air and on the ground. The concepts of pursuit, escort, and other types of 'counter-air' missions thus evolved along with the technologies that made them practicable—these were and remain the only types of missions that one can describe as having *exclusive* application in the aerial domain.

Another mission that developed with military application, again of direct benefit to ground forces, was airlift, i.e., the aerial movement of personnel and supplies to and around the battlefield. As rotary-wing aircraft became practical and prevalent, 'air-mobility,' a hybrid of airlift closely linked to the tactical maneuver of ground forces, joined the U.S. military vocabulary and filled out the palette of air power capability in war. Air power has thus been an enabler of ground combat since its inception. This study focuses specifically on the history of just two air power applications, CAS and ISR, which are of particular interest in COIN warfare. This study investigated the ways in which the air power forces of the U.S. have provided support to ground forces in all types of conflicts, including COIN as well as conventional warfare. The conclusions drawn set the context for the state of COIN air power capability at the beginning of the Iraqi and Afghan conflicts. They are also potentially controversial, because they echo some complaints against which the Air Force has historically defended itself from critics in the Army and elsewhere in the defense establishment. The findings summarize as follows:

1) Applying air power in support of ground forces waging COIN is one of the U.S. Air Force's least-favorite, least-practiced, and lowest-priority missions;

2) COIN air power elements, both CAS and ISR, atrophy during periods of comparative peace, then exhibit rapid improvement during times of war, catching the U.S. military ill-prepared at the outset of a conflict but witnessing great proficiency as conflicts draw down; and

3) USAF COIN air power capability was not as flat-footed as historical trends might have suggested when OEF and OIF began because recent Balkan conflicts in the 1990s had required both CAS and ISR capabilities in the pursuit of political objectives.

None of these assertions stands alone without reference to historical evidence, but a complete pursuit of all of them is beyond the scope of this chapter. Readers who would like to see a brief summary of the U.S. air-power history upon which they are based, however, should consult Appendix A. General Robert Foglesong, who had an insider's perspective as the Air Force Vice

Chief of Staff and later as the commander of the U.S. Air Forces in Europe, offered this

commentary on the state of affairs between the Air Force and Army when operations in

Afghanistan began:

In a sense, the Air Force and the Army had...drifted apart over the years in close air support. And it wasn't because somebody, years ago, made the decision that we wanted to drift apart, it was just that that had happened...

So...three decades later, ...here we are doing close air support in OEF. So our cultures had moved away, and... so had our dedication to a couple of things...

Now, we had a new form of close air support that was being delivered from 30,000 feet... So it was an uncomfortable thing, to a degree, for the ground forces, that all of a sudden have to accommodate this change in culture... There're new ways of doing business, and we had not hooked ourselves up in a way that we should have over the last two decades. Nobody's fault. This is not being critical, it just happened that way... The Army and Air Force have had several meetings on this and really have made great strides... So we...now have remarried, I guess. But we still have work to do.[740]

General Foglesong's 2001 description is not a historical aberration; the atrophy of joint

capability and need to improve cooperation matches the typical state of affairs at the beginning

of a new military campaign that requires air and land forces to combine capabilities on the

battlefield. This view provides the perspective from which this investigation continues its

description of how COIN air power capabilities developed over the decade after Al-Qaeda's

most infamous direct attack against the U.S.

II. Afghanistan and Iraq: Cooperation in the Post-9/11 COIN Conflicts
A. The nature of air-ground cooperation in Afghanistan and Iraq
Following in the wake of a routine period of unintentional neglect, contemporary U.S. conflicts

abroad witnessed key developments in military organization, training, and equipment that made

air power better able to support ground units engaged in COIN fighting. Military activity in

Afghanistan immediately after 11 September 2001 was, like Desert Storm and the Balkan

conflicts of the 1990s, an air power-intensive undertaking most closely resembling MCO, albeit

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[740] Quoted in Robert H. Foglesong, "Springboard for Airpower: Remarks by General Robert H. Foglesong," *Air Force Magazine*, March 2004.
http://www.airforcemag.com/MagazineArchive/Pages/2004/March%202004/0304airpower.aspx.

between ill-matched enemies. Six weeks after an "easy" bombing campaign began on 7 October 2001, the Taliban regime had abandoned Kabul and was on the run with al-Qaeda forces to Tora Bora; happily, "not a single American soldier had been killed."[741] Enabled by the U.S. Central Intelligence Agency and significant air power support, a Special Forces contingent numbering in the mere hundreds had enabled and overseen the toppling of the Taliban regime in Afghanistan.[742] An initial lack of forward land bases accessible to U.S. and NATO forces accelerated the integration of naval aviation into Operation Enduring Freedom (OEF). Interdiction missions by land- and carrier-based aircraft were able to "flip all of Afghanistan in three days."[743] This meant destroying, with use of the strike assets available to the Coalition Forces Air Component Commander (CFACC), all designated targets in the country within a matter of 72 hours.[744]

The follow-on campaign lasted much longer and required more manpower, consistent with predictions about successful indirect COIN strategies and the early advocacy of General Eric Shinseki, the Army Chief of Staff from 1999 to 2003.[745] A steady-state peak of more than 130,000 American and NATO allied military personnel deployed to OEF, waging a campaign to

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[741] Robert Guest, "The "Good War" Winds Down," *The Economist: The World in 2014*, 30 October 2013, 62.

[742] Sean Naylor, *Not a Good Day to Die: The Untold Story of Operation Anaconda* (New York: Berkeley Books, 2005), 14.

[743] Peter E. Gersten (Brigadier General, USAF; Joint Staff Deputy Director for Politico-Military Affairs (Western Hemisphere); former Director of Operations (2002-2003), Secretary and Chief of Staff of the Air Force Executive Action Group), personal interview with the author, 22 October 2013.

[744] The capabilities available to the CFACC included land-, air- and sea-launched missiles as well as the bombs carried by Air Force and Navy aircraft, a fairly wide range of options for striking targets in a land-locked country for which the U.S. did not yet have any interior basing. The simplistic, air power-centric description of operations described here applies only to the opening weeks of OEF. As David Johnson pointed out, a holistic view the first six months of the operation would acknowledge, "U.S. ground forces [were] needed to do the searches and rooting out that surrogate Afghan forces did not want to do." See Johnson, *Learning Large Lessons*, 139. After this phase, the conflict settled into stability operations (nee MOOTW) to stabilize and rebuild Afghan institutions.

[745] Thom Shanker, "New Strategy Vindicates Ex-Army Chief Shinseki," *The New York Times*, 12 January 2007, A13. http://www.nytimes.com/2007/01/12/washington/12shinseki.html?_r=0.

defeat remaining insurgent forces and rebuild Afghanistan's national security forces.[746] When the 'Global War on Terror' expanded in 2003 to include OIF, a maximum of 207,000 western (U.S. and its allies) military personnel deployed. U.S. involvement increased to a maximum of 187,900 military personnel present in either Iraq or Afghanistan, with as many as 294,000 military personnel supporting the operations in the CENTCOM area of responsibility.[747]

According to David Johnson's description, both the Afghan and Iraqi conflicts involved enemies classified as 'non-state irregular' organizations. The Afghan Taliban and Al-Qaeda in Iraq consisted of untrained fighters lacking formal discipline and employing dispersed, cellular structures of small formations. The use of short-range small arms, mortars, IEDs, and mines as the sole sources of firepower made air power largely uncontested above 3,000 feet. Furthermore, ISR for overhead observation and signals intelligence were among the most important uses of air power, along with air mobility and CAS.[748]

In spite of, perhaps in part because of, contrary appearances during the 1990s, rhetoric from 2001 suggests that the Air Force and Army were confident in their ability to jointly execute CAS entering 2002. Joint interest in CAS had not yet appeared to diminish as rapidly as it had after previous conflicts. The recent Balkan conflicts and handoff of the senior Air Force leadership reins to fighter pilots, who gave more focus to tactical-air power, may have contributed to this enduring CAS attention. Both services retained liaisons in major headquarters and planning staffs.[749] General John Jumper, in his roles as the Commander of U.S. Air Forces in

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[746] "Operation Enduring Freedom Fast Facts," CNN Library, accessed 8 December 2013, http://www.cnn.com/2013/10/28/world/operation-enduring-freedom-fast-facts/.

[747] U.S. force estimates are from Amy Belasco. "Troop Levels in the Afghan and Iraq Wars, FY2001-FY2012: Cost and Other Potential Issues." Washington DC: Congressional Research Service, 2009. They do not include other NATO countries.

[748] David E. Johnson, *Hard Fighting: Israel in Lebanon and Gaza* (Santa Monica: RAND Corporation, 2011), xxii-xxiii.

[749] These liaisons were primarily at the corps level of the Army structure, however, not at divisional echelons or lower. This proved to be a limiting factor given the Army's scheme of giving greater autonomy to division

Europe, Air Combat Command, and eventually the Air Force Chief of Staff from 2001 to 2005,

continued a trend toward CAS proficiency that General Ryan had advanced during his tenure as

service chief following his European war experiences.

Jumper also made a significant commitment to further UAV penetration in the Air Force,

committing in 2005 to buying "every *Predator* General Atomics can produce," promising to

quadruple the number of UAV squadrons in the service, and dismissing out of hand the idea that

pilots devalued the role of unmanned aircraft in combat.[750] In spite of the existence of a degree of

CAS proficiency and the relative ease with which the U.S.-led coalition dispatched the Afghan

government, though, the transition to steady-state COIN air power applications came with

difficulty.

B. Operation Anaconda: An Inauspicious Start
Even though fixed-wing capability to provide the air strikes requested by special operators

doubtless existed at the beginning of the Afghan campaign, it quickly became clear that its use in

close support of conventional Army units was not a finely honed capability. Operation Anaconda,

executed in the first half of March 2002, was the first major conventional battle for the U.S.

military in Afghanistan. Because it led to the first casualties that received significant media

attention, the operation inspired a great deal of soul-searching within the Air Force and the Army.

Initial reports from Combined Joint Task Force Mountain, the organization with nominal

command and control of Anaconda, claimed a tactical success based on the number of Al-Qaeda

and Taliban fighters killed in the operation.[751, 752] But the casualties, including eight Americans

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commanders, as the section immediately following this will demonstrate. See also Jody Jacobs et al., *Enhancing Fires and Maneuver Capability Through Greater Air-Ground Joint Interdependence* (Santa Monica: RAND Corporation, 2009), 62.
[750] Randy Roughton, "Rise of the Drones: 9/11 and War on Terror Sparked an Explosion in Unmanned Aerial Vehicle Technology," *Airman*, 16 September 2011. http://airman.dodlive.mil/2011/09/rise-of-the-drones/.
[751] Several conversations and written works confirm that command-and-control schemes laid out on organizational charts were confusing, with an amalgamation of co-equal special operations-based task forces operating on the periphery of CJTF-Mountain's area of operations (AO). "The way [Combined Forces Land Component Commander

killed in action, and a protracted inter-service argument about the planning and intelligence analysis prior to the operation imbued it with controversy.[753]

The U.S.-led coalition forces for Anaconda included a blend of about 2,500 soldiers. They were comprised of 200 U.S. Special Forces, 1,400 U.S. conventional forces from the 10th Mountain and 101st Airborne Divisions, with a remainder of Afghan fighters. This force, commanded by Major General Franklin Hagenbeck, planned a 'hammer-and-anvil' attack against an enemy force that the 10th Mountain Division intelligence organization estimated, based on a month of aerial, satellite, and human surveillance, to be between 125 and two hundred persons. Once the attack began on 4 March, however, it quickly became apparent that the enemy force was much larger. Closer to the 1,500 to 2,000 enemy personnel that U.S. Central Command intelligence had originally estimated, the Al-Qaeda resistance was well-concealed in positions of high terrain, using significant small arms and several large mortars. A friendly fire incident by an AC-130 gunship with an errant navigation system inadvertently repelled the 'hammer' portion of the attack, which was to be executed by U.S. Special Forces-led Afghan troops. This left the

Lieutenant General Paul] Mikolashek set it up, everyone thought he was in charge, which meant that no one was in charge;" Louis G. Bochain (Colonel, USAF (ret.); former Commander (July 2001 - July 2003), 20th Air Support Operations Squadron), personal interview with the author, 24 January 2014. See also, *inter alia, Mark G. Davis, "Operation Anaconda: Command and Confusion in Joint Warfare" (Master's thesis, School of Advanced Air and Space Studies, 2004), 16; Naylor, Not a Good Day to Die, 87-89; Matthew D. Neuenswander, "JCAS in Operation Anaconda—It's Not All Bad News," Field Artillery, May-June 2003, 3.*

[752] Gerry J. Gilmore, "Anaconda is Success; Enemy Killed Unknown, Say Officials," American Forces Press Service, accessed 23 December 2013, http://www.defense.gov/News/NewsArticle.aspx?ID=44244. The metric chosen advances a singularly annihilative view of the operation.

[753] Sean Naylor provides a balanced, unclassified history of Operation Anaconda researched from his perspective as a reporter embedded with conventional ground forces who participated in the operation; Naylor, *Not a Good Day to Die*. Special Forces, conventional Army, and Air Force personnel interviewed for this work all concurred that Naylor did an exceptionally good job of reporting Anaconda in the book, reflecting a willingness to provide all service perspectives as he learned more about the planning and intelligence shortfalls leading up to the battle. Matthew D. Neuenswander (Colonel (ret.), USAF; Director, LeMay Center JID (Ft. Leavenworth); former Commander (2001-2002), 332 AEG), personal interview with the author, 7 January 2014; Bochain Interview, 24 January 2014; Peter A. Donnelly (Colonel (ret.), USAF; former Assistant Director of Operations, 20th ASOS), personal interview with the author, 24 January 2014; Nelson Kraft (LTC, USA; Chief of Tactics, U.S. Army Maneuver Center of Excellence; former Commander, Charlie Company, 1st Battalion, 87th Infantry Brigade, 5th Mountain Division (November 2000-May 2002)), telephonic interview with the author, 30 January 2014; Andrew Q. Jordan (Major, U.S. Army; J33, Arabian Peninsula Working Group; U.S. Special Operations Command Central), telephonic interview with the author, 3 February 2014.

entrenched Al-Qaeda fighters unchallenged for a time, allowing them to attack the U.S.

conventional and Afghan force-backed 'anvil.' The ensuing battle raged for two weeks instead of

the expected three days, and took a continuous emergency CAS effort to drive back enemy

attackers. Final estimates of enemy killed ranged from five hundred to over seven hundred,

underlining the errors of the initial intelligence estimate while driving home the U.S. focus on

annihilative metrics.[754]

Shortly after Anaconda, an accidental bombing of Canadian paratroopers at the Tarnack

Farms Range near Kandahar, Afghanistan suggested that airspace management and CAS

procedures were not yet perfected for the war on terror.[755] Lieutenant General T. Michael

Moseley, then the CFACC for operations across the Central Command (CENTCOM) region,

authored a memo directing his subordinate air commanders to review rules of engagement with

aircrew.[756] It reflected mounting frustration with the friendly-fire incident and the overall CAS

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[754] See Davis, "Operation Anaconda," 123; Vernon Loeb, "General Defends Tactics in Afghan Battle; Commander Denies al Qaeda Fighters Escaped Into Pakistan, Says Hundreds Killed," *The Washington Post*, 12 March 2003. http://search.proquest.com.aufric.idm.oclc.org/nationalnewsexpanded/docview/409490575/fulltext/14321292D8647 F3E42/1?accountid=4332.

[755] The pilot who released the errant bomb was Major Harry Schmidt, an Air National Guard F-16 pilot from Illinois' 183rd Fighter Wing. For an in-depth history of the incident, see Michael Friscolanti, *Friendly Fire: The Untold Story of the U.S. Bombing that Killed Four Canadian Soldiers in Afghanistan* (Mississauga, Ontario: John Wiley & Sons Canada, Ltd., 2005). Schmidt and Major William Umbach were ultimately charged with negligent manslaughter, aggravated assault, and dereliction of duty, but not until 11 September 2002. In the meantime, Schmidt and his defense attorneys ran what a prosecutor called a "media circus" to refute the accusations; ibid., 524. The Air Force dropped its charges against Umbach. Lieutenant General Bruce Carlson presented a letter of reprimand on 6 July 2004. It implied that Schmidt lacked integrity and cited "arrogance," "lack of flight discipline," and "poor judgment" during and after the incident—following numerous procedural and legal delays including Schmidt's request for a court martial; ibid., 478-80. In 2002, claims about the failure of Air Force senior leadership and spin suggesting that CAS procedures in Afghanistan were lacking seemed to have more bite with regard to this specific incident than they did when this incident reached legal and administrative resolution. However, the case did color the Carlisle Barracks discussions and was an overall indicator that the Air Force and Army had more work to do before CAS procedures would be non-controversial; Gersten interview, 22 October 2013.

[756] The U.S. Unified Command Plan (UCP) divides the globe into six regional areas of responsibility (AORs), assigning a four-star Combatant Commander to oversee each one. The Afghan and Iraqi conflicts happen to have occurred in one of the most active AORs, that of the U.S. Central Command (USCENTCOM or CENTCOM). CENTCOM's responsibilities include western Asia, the Middle East, and Egypt, though it also provided oversight of operations in parts of the Horn of Africa during this era. The regional subcommands—air, maritime, land, and special operations—have names mirroring that of the regional command, i.e., USAFCENT, USMARCENT, USARCENT, USSOCCENT. There are also three functional combatant commands (Special Operations, Strategic, and Transportation) that provide functional capability worldwide. See Andrew Feickert. "The Unified Command

difficulties emerging in a theater that had been relatively free of air-ground coordination

problems:

I need everyone's head in the game—we cannot afford another tragic incident. Commanders will sit down with their aircrews and 'chair fly' [the rules of engagement] to ensure a complete understanding. Before aircrew step to the jet, they must have a solid understanding of the ground situation and the ongoing dynamics. I cannot overstate how fluid the ground environment in Afghanistan is and the challenges this creates in identifying friendly vice Taliban and al Qaeda forces.

Friendly forces on the ground are lightly armed and working in difficult terrain against an elusive enemy. These troops have come to rely on airpower when they become engaged. We need to be there and do it right in accordance with the ground commander's priorities and deconfliction plans among the many teams throughout the area.[757]

The aftermath of Operation Anaconda had ramifications across all levels of the inter-service

Army-Air Force relationship. In some media interpretations, the incident became a distraction for

both services, stopping substantial cooperative efforts among flag officers while both sides dug

in for an ideological battle. Another group of subject matter experts have opined that Anaconda

put "laser-like focus" on CAS and other air support for conventional ground forces.[758] Reality

existed somewhere in between. As General Jumper remarked, "you have to gather the facts

before you can discuss what happened."[759] The fact gathering for Anaconda took almost three

years, culminating in Sean Naylor's book and a rather defensive report released by the Air

Force.[760] The Air Force's corporate answer to Hagenbeck's criticism can be condensed the

following way: if CAS planning had been incorporated into the TF Mountain plan from the

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Plan and Combatant Commands: Background and Issues for Congress." Washington DC: Congressional Research Service, 2013, 1-3.

[757] Rowan Scarborough, "'Friendly Fire' Judge's Memo Assailed: General Criticized Actions that Led to Deaths of Canadians," *The Washington Times*, 30 July 2002.

[758] The quote comes from Bochain Interview, 24 January 2014. The sentiment it reflects, though, was reflected in several other interviews, including Kraft interview, 30 January 2014; Jumper interview, 16 December 2013; Donnelly interview, 24 January 2014.

[759] Jumper interview, 16 December 2013.

[760] "Operation ANACONDA: An Air Power Perspective." The Pentagon: Headquarters United States Air Force, Office of Air Force Lessons Learned (AF/XOL), 2005. Rebecca Grant was a lead author for the report. Grant is the president of IRIS Independent Research and a senior fellow at the Lexington Institute. She has a long history of working for the U.S. Air Force in an official capacity, and her author credits include over thirty major articles for *Air Force Magazine*, the official publication of the Air Force Association, a lobbying organization that advances the U.S. Air Force agenda in Congress, industry, and public relations. She has also served as the director of the Air Force Association's General Billy Mitchell Institute for Airpower Studies.

inception of the operation instead of waiting until less than a week before its initiation, a more adequate theater air control system could have provided adequate CAS without the mid-air conflicts and confusion observed in the event. As it was, the report argued, CAS was responsive and delivered thousands of precision munitions to good effect; shortcomings in Anaconda were mainly due to poor planning and inadequate intelligence about the number of enemy fighters present in Shahikot Valley.[761]

While Anaconda revealed both personal and organizational shortcomings that will figure into this work's later analysis, it was on balance yet another inauspicious debut for U.S. CAS in a conventional conflict. Against a massed, but concealed, enemy force, the U.S. had once again entered major combat operations without a satisfactory plan for close integration of air power with conventional ground forces. Exuberance over the success of interdiction and the ability of air power to aid in the defeat of a badly overmatched conventional enemy gave way to dismay when the remnants of that enemy dug in and concealed its true strength. The rest of OEF would involve a close-fought battle with insurgents concealed among the population, a manner of fighting consistent with classical Maoist warfare, and the measures to integrate air power into that war would have to become much more refined than they were during the first two Taliban-dispersing months of the operation.

As with previous inter-combat eras, a pattern of recognized CAS weakness (and amelioration of that weakness) emerged as the defining context from Anaconda, but the proper lessons were slow to emerge. Although Hagenbeck's post-Anaconda comments suggested a lack

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[761] Two indispensable references for understanding the nuances of Anaconda are Naylor and Mark Davis. Naylor's account provides the critical perspective of ground forces that showed how difficult it was to orchestrate CAS given the state of training that existed at that point. Naylor, *Not a Good Day to Die*, see, e.g., pp. 281-93. Davis's description of the command-and-control issues involved in planning and executing the operation demonstrated why air power planning was not integrated into the Anaconda plan as fully as it might have been. It also explored the lack of operational control that General Hagenbeck had over all the component coalition forces, which would have made it difficult for him to direct fires from air power even if it had been planned with greater thoroughness. Davis, "Operation Anaconda," see pp. 123-25.

of ground-based air controllers, the truth was that there were thirty-seven in the battle. This meant that an air-controller density of about one enlisted terminal air controller (ETAC) per square kilometer existed throughout the battle. Not only were JTACs present for Anaconda, they had been integrated all the way to company-level echelons of conventional Army forces.[762]

Having many coordinators in the fight, however, did not automatically lead to a responsive tactical air-ground system. The density of autonomous air controllers in Operation Anaconda was far too high for effective fire control, as it lacked an overarching organizing scheme from a higher headquarters. Such organization is theoretically "the job of the ASOC or the CAOC."[763] Independent controllers directing fires on a rugged, hostile battlefield crowded with friendly forces amongst a hidden enemy led to a disjointed "pick-up game."[764] Some CAS pilots withdrew from live firefights on the ground after airborne near misses; they realized that there was substantial danger having so many aircraft so close together being controlled by ground parties who could not talk to each other on the same radio frequencies.[765] Since Lieutenant General Moseley was not at his headquarters during the bulk of Anaconda planning, it is entirely plausible that the scope of Anaconda eluded him, just as the size of the enemy force eluded the Tenth Mountain Division.[766]

Ample fodder exists for critics who would assign blame to either the Air Force or the Army for the setbacks and casualties that marked Operation Anaconda. It is true that the Army planners

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[762] Speaking about the relationship with his JTAC, Kraft, who was a company commander in Anaconda said, "SrA Achey was *my* JTAC; I knew him real well…we got along great. I would tell you that Achey was really the workhorse. Achey picked up the slack from the battalion level. He was a… [brash, physically-fit airman] …who I really liked, and we got along great;" Kraft interview, 30 January 2014.

[763] Neuenswander, "JCAS in Operation Anaconda," 3. The Combined Air Operations Center (CAOC) is, in Air Force doctrine, the facility from whence the CFACC directs air and space operations. During the era of OEF and OIF, the CAOC started at Prince Sultan Air Base, Saudi Arabia, and moved to Al Udeid Air Base on the outskirts of Doha, Qatar in 2003, where it remains at this writing.

[764] Gersten interview, 22 October 2013.

[765] "The A-10 the Hornet almost collided with on the night of 5 March 2002 was under my command, and I was as unhappy as the Hornet pilot was about the chaos over the battlefield;" "JCAS in Operation Anaconda," 2.

[766] Naylor, *Not a Good Day to Die*.

did not involve the Air Force until the last minute and then were too sanguine in their anticipated

need for CAS, a symptom of faulty intelligence estimates of enemy strength. It is also true that

the air liaison squadron (the 20th ASOS, capable of establishing an ASOC) assigned to the 10th

Mountain Division had multiple times been denied passage to Afghanistan, a move the division's

Chief of Staff repeatedly blamed on troop-level limits imposed by the Secretary of Defense.[767]

Erroneous comments by the fire-control officer for Anaconda about which units took enemy fire

revealed a startling lack of situational awareness at the headquarters that persisted even after the

operation was complete.[768]

On the other balance lies the Air Force, who from the CAOC paid lip service to supporting

the operation but did not realize how dense the calls for CAS might become.[769] Only at lower

levels within the air-ground coordination hierarchy did remarkable persistence result in an

inordinately high number of CAS aircraft being scheduled and airborne during the opening hours

of Anaconda.[770] On top of this, a demonstrated focus of attention on the soon-to-open Iraqi

theater and a sense of complacency that developed as the CAOC became "used to controlling air

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[767] According to Bochain and Donnelly, the JTACs assigned to the 20th ASOS (the squadron dedicated to support the 10th Mountain Division) were repeatedly pulled from military airlift after they had boarded aircraft at Fort Drum in expectation of being deployed to Afghanistan. In each case, Colonel Joe Smith, the Chief of Staff of the 10th Mountain, attributed it to the "limited footprint" allowed by OSD planners for Afghan operations. Donnelly interview, 24 January 2014; Bochain Interview, 24 January 2014.

[768] *Not a Good Day to Die*, 273.

[769] Major Paul Wille, CJTF Mountain's lead planner for Anaconda, quoted General Moseley as saying "You've got the world" with respect to air support in a pre-operation video teleconference on 26 February 2002; quoted in ibid., 137.

[770] Donnelly and Bochain recounted that Major General Hagenbeck resisted all but a few of the preliminary attacks recommended by the ad hoc air support cell assembled at Bagram Air Base. However, because then-Major Donnelly recognized the potential scope of need for CAS as he became exposed to the operational plan, he prevailed upon the CAOC to have approximately eight times more CAS assets airborne and available to the theater that day that otherwise would have been flying. Donnelly interview, 24 January 2014. General Jumper remarked that "the fact they were able to get there at all was a miracle" given the "recurring theme of the Air Force ground support parties not being taken care of. In the early days of Afghanistan, when the Army was setting up deployment priorities, they just didn't call for their ASOS. Then during Anaconda you get the CNN image of the commanding general running around saying, 'Where's my air? Where's my air?' when he knew damn good and well where it was—he had left it behind." Jumper interview, 16 December 2013.

strikes from their base in Saudi Arabia" rather than providing responsive CAS to the shifting needs of a ground commander in battle.[771, 772]

Unfortunately for the forces involved, the CAS 'lessons' of Anaconda did not prevent further tragedy from impacting operations in Iraq that followed about a year later. On 23 March 2003, U.S. Marines called in air strikes from A-10s against a sister company after they became confused about their relative positions during an advance on two bridges in Nasiriyah. During the battle, eighteen Marines died and combat fire wounded another seventeen. Because the fight was fierce and enemy fires intense, the extent to which friendly fire contributed to these casualties was impossible to determine, but the incident spurred CENTCOM to again investigate methods for providing CAS. The final report raised familiar issues that have plagued CAS efforts as long as the mission has existed: lack of trained air controllers and difficulty with communications equipment.[773] The report added a new wrinkle of difficulty that did not appear in any reports from previous conflicts, though, mentioning that "lack of training on their new

[771] *Not a Good Day to Die*, 272.

[772] There is room for caution in interpreting the post-Anaconda story, as it is clear that individuals interviewed in its aftermath spoke with the knowledge that they were defending their actions in a contentious period that would be subject to a great deal of scrutiny for years to come. Call, in the absence of the opportunity to interview the 10th Mountain Division commander, made veiled allegations that Hagenbeck deliberately excluded both air planners and air controllers from the Air Force in preparing for Operation Anaconda. See Steve Call, *Danger Close: Tactical Air Controllers in Afghanistan and Iraq* (College Station: Texas A&M University Press, 2007). Hagenbeck received harsh criticism for his leadership in Anaconda from sources outside the military establishment. Barry Posen commented that in directing Anaconda, Hagenbeck "didn't know what he was doing. He didn't send enough forces. He didn't take enough artillery. And there was too much reliance on the Afghans. And, it's clear, they were kerfuffled afterward…and the commander was relieved." See Nicholas Lemann, "The War on What? The White House and the Debate About Whom to Fight Next," *The New Yorker*, 9 September 2002. (Lieutenant General Dan McNeil replaced Hagenbeck in Afghanistan, but his replacement appears to have been a normal combat rotation, and his subsequent promotion does not suggest the ignominy of discipline for a tactical failure.) The extreme nature of the accounts is probably *ex post facto* puffery—many emphasize an intentional divide between conventional and special forces that probably grew larger in hindsight than it ever was during planning.

[773] The summary of the battle comes from a report of an investigation conducted by the air component of U.S. Central Command at the direction of its commander, General John Abizaid.

'Blue Force Tracking' situational awareness systems" had contributed to the Marines' mistaken air strike requests.[774]

The Blue Force Tracker (BFT) mentioned above is not specific to CAS missions; it is a system that uses radios to create a shared network of data-links among friendly forces. The intent of BFT and other situational-awareness technologies enabled by local wireless networks is to enable friendly forces to better track where nearby units are to prevent friendly fire incidents. The system, relatively new to most ground units at that time, failed to prevent friendly fire in the incident. Whether a failure due to training or some other friction of war, the incident is a reminder of the persistent difficulties that arise in integrating air power into a close ground battle, one of the most fluid, and therefore unpredictable, scenarios in the scope of military operations.[775]

Advancing from this series of uneven starts, the next section addresses efforts to improve the speed and lethality with which CAS could impact enemy forces, which made it easier and safer for friendly forces to request and use. It does so with an appreciation for the increasing complexity of technology as well as the growing COIN nature of the conflicts that continued in Iraq through 2010 and in Afghanistan through this writing.

C. CAS and UAV-ISR 'Pinnacle' of 2008
Routine, Multi-Service, Multi-Platform Precision Engagement
In addition to the controversy and defensive inter-service dialogue it inspired, Operation Anaconda demonstrated early in the Afghan conflict that there was room for improvement in capacity and capability to perform CAS in rugged terrain. Iraq provided similar lessons with

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[774] "CENTCOMM Commander Urges Close Air Support Examination," (Jane's IHS: Jane's Defence & Security, 2004).

[775] The creation of data-link networks designed to provide the kind of battlefield awareness envisioned by BFT was, ironically, one of Kenneth Allard's case studies (see Chapter 2). (Allard wrote about the Joint Tactical Information Distribution System (JTIDS), which is distinct from BFT.) Clearly, and tragically, the Marines had not yet achieved Allard's "baseline of interoperability" needed for successful combat application of data-link situational awareness, even within a single service; Allard, *Command, Control, and the Common Defense*, 257.

respect to CAS executed over cities—'urban terrain' in military jargon. Improved capabilities indeed emerged as soldiers and Airmen continued to articulate requirements for equipment, training, and organization, leading to more agile fire support for land forces involved in the COIN fight. In turn, the military services funded, trained, and fielded these capabilities via the forces they provided to joint-service combatant commanders.

This evolution unfolded over several years and witnessed a shift toward air-power competencies that favored direct ground support in lieu of other capabilities. In the priorities for equipping and training the fleets and aircrew of fixed-wing fighter aircraft, CAS took priority over different mission sets, including deep interdiction and air superiority.[776] During this period, the technology that enabled CAS grew rapidly, and training opportunities to put it into practice increased as well. At the level of "tactical" integration, coordination between fielded Air Force and Army units became closer, more routine, and more responsive, with a subsequent growth in mutual trust among tacticians.[777] The relationships between senior commanders that enabled this cooperation, though, marked an uneven trail of progress.[778]

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[776] The character of COIN in general and the post-9/11 conflicts in particular reflect an absence of the operational level, where airpower has evolved to be most efficient. The tactical level of war is readily identifiable in COIN, as is the strategic, and they demonstrate a high level of interconnectivity. But the level of warfare typically identified as 'operational' is absent. Hence, there is difficulty in prosecuting these wars from the Air Operations Center, which is really an operational-level system of command and control. Johnson interview, 24 February 2014.

[777] Most military doctrine styles itself as *strategic* (or *basic*), *operational*, or *tactical*. For example the Air Force claims that operational doctrine "guides the proper employment of air and space forces in the context of distinct objectives, force capabilities, broad functional areas, and operational environments" whereas tactical doctrine merely "considers particular tactical objectives;" "Air Force Doctrine Document 1: Air Force Basic Doctrine," (Washington DC: Department of the Air Force, 1997), 2. Using this rubric, the presence of JTACs in Anaconda would fall under "tactical" doctrine (an oxymoron to many other services), but stitching together a functional air-ground control system to integrate their activities with the CAOC would constitute application of "operational" doctrine. In OEF and OIF, the former was a robust and trusted system; the latter consistently left something to be desired.

[778] Relationships among senior commanders probably fit the "operational" definition as well, but because friction at this level often involves "how Air Force forces are organized and employed," it matches the "basic" definition in AFDD-1 (1997). The muddling of operational relationships with "strategic" ideas reinforces Jeff Donnithorne's observation that the Air Force's basic doctrinal ideas are not intuitive and require constant restatement and intellectual defense; Donnithorne, "Principled Agents," 227-28.

Despite this patchy record, progress did occur in Afghanistan and Iraq. An unclassified summary of aerial engagements conducted on a single day, 17 July 2008, provides a representative sample of extensive combined arms cooperation. The technologies found in the weapons systems it references and the command-and-control relationships that existed to allow this collaboration reflect a myriad of the most pertinent CAS advances that had occurred since 2001. The account reflects command-and-control mechanisms that allow the apparently seamless use of multi-service and coalition assets to complete direct-support CAS and ISR missions, as well as a wide range of precision-guided munitions technologies.[779] This level of integrated

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[779] Excerpts from the account follow, with explanatory comments in brackets: "Coalition airpower integrated with Coalition ground forces in Iraq and the International Security Assistance Force in Afghanistan in the following operations July 17, according to Combined Air and Space Operations Center officials here. In Afghanistan, an Air Force B-1B *Lancer* dropped guided bomb unit-38s onto an enemy sniper position in the vicinity of Shindand. [The U.S. Air Force's B-1B is a nuclear- and conventional-munitions-capable bomber with four crew positions. A GBU-38 is a 500-pound GPS-guided munition.] Additionally, a Royal Air Force GR.7 *Harrier* dropped an enhanced *Paveway II* munition onto an enemy compound engaging Coalition Forces. [The GR.7 is an upgraded version of the Royal Air Force's *Harrier II* Vertical/Short Takeoff and Landing (V/STOL) strike aircraft. "Enhanced *Paveway*" refers to family of U.K. weapons that have the ability to guide to GPS coordinates or home on laser energy focused on a target; they are similar in capability to dual-mode GPS/laser-guided U.S. weapons such as the GBU-54. Paveway systems are weapons guided by reflected laser energy alone and are used by both the U.S. and U.K.] Furthermore, a Navy F/A-18C *Hornet* fired canon rounds and dropped GBU-12s and -38s onto an enemy compound engaging Coalition Forces and performed a show of force to deter anti-Afghan activities. [The F/A-18C is a single-seat multi-role U.S. Navy fighter-bomber aircraft. References to "canon rounds" refer to air-to-ground strafe by fighter and attack platforms; GBU-12s are 500-pound, laser-guided *Paveway II* munitions. A 'show of force' is a low pass by an aircraft over an area of interest. The aircraft does not expend munitions, though it may use countermeasures, such as flares, to increase its visibility.] The joint terminal attack controller reported the mission successful. Near Nangalam, Air Force A-10 *Thunderbolt IIs* dropped general-purpose 500-pound bombs onto anti-Afghan fighting positions. [The A-10 is a U.S. Air Force single-seat, ground-attack aircraft and carries a canon that shoots rounds thirty millimeters in diameter; all other dual-role U.S. fighters have a twenty-millimeter version. 'General purpose bombs' employ no guidance system after their release from an aircraft. Onboard systems provide aircrew with a calculated depiction of where bombs will hit; the hand-eye coordination of the pilot is responsible for getting the bomb to an appropriate release point.] The mission was declared successful by the JTAC. Air Force F-15E *Strike Eagles* dropped GBU-12s and -31s onto enemy fighting positions near Bari Kowt. [The U.S. Air Force F-15E is a two-seat, dual-role fighter-bomber. A GBU-31 is a 1000-pound GPS-guided bomb.] The JTAC confirmed the mission successful… Navy F/A18E *Super Hornets* performed a show of force in the vicinity of Garmser to deter anti-Afghan activities… [The F/A-18E is a two-seat, multi-role fighter-bomber that has largely replaced the F-14 in the U.S. Navy inventory.] In total, 70 close air support missions were flown as part of the ISAF and Afghan security forces, reconstruction activities and route patrols. [The International Security Force (ISAF) is the coalition of military forces provided by nations participating in OEF in Afghanistan. It is mostly comprised of NATO nations, though several non-NATO members have participated. The ISAF commander has been a U.S. Army general, responsible for all military operations and the U.S. forces in Afghanistan. He reports to both the U.S. military chain of command as well as the NATO chain of command, since NATO formally administers OEF. The NATO Supreme Allied Commander is also traditionally a U.S. four-star flag officer.] Fourteen Air Force and Royal Air Force surveillance and reconnaissance aircraft flew missions as part of operations in Afghanistan. Additionally, six Navy

aerial activity is a marked departure from the chaos of Anaconda and represents a significant level of normalized joint cooperation. In this press release, more than a dozen significant advances allowing for better integration between air and land forces were on display. Along with the manned, fixed-wing air power capacity on view in this excerpt, the quantity of Air Force UAV support available to provide real-time pictures to ground commanders of the threats and terrain they faced had grown more than twenty-fold.

In addition to the technology and weapons systems apparent in this description, several other command-and-control changes allowed these operations to proceed safely and with close coordination among the appropriate component forces. This section will explain the changes that made such reports routine, many of which would have been unattainable in 2001 or even 2005. The following description is arranged using an *organize-train-equip* rubric, paralleling the mandates found in law and joint doctrine for the individual services to train, organize, and equip their forces. As discussed in Chapter 2, the services provide trained and equipped fighting and support units, organized into domain-specific components, that they believe are best suited to give joint commanders the required combat capability. It is up to joint force commanders to

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and Royal Air Force aircraft performed tactical reconnaissance. In Iraq, Coalition aircraft flew 56 close air support missions for Operation Iraqi Freedom. These missions integrated and synchronized with Coalition ground forces, protected key infrastructure, provided over watch for reconstruction activities and helped to deter and disrupt terrorist activities. Twenty-four Air Force and Navy surveillance and reconnaissance aircraft flew missions as part of operations in Iraq. Additionally, four Air Force and Royal Air Force aircraft performed tactical reconnaissance. U.S. Air Force C-130s and C-17s provided intra-theater heavy airlift, helping to sustain operations throughout Afghanistan, Iraq and the Horn of Africa. Approximately 142 airlift sorties were flown; 514 tons of cargo delivered, and 1,729 passengers were transported. This included approximately 33,792 pounds of troop resupply air-dropped in Afghanistan. Coalition C-130 crews from Australia, Canada, Iraq and Korea flew as part of operations in Afghanistan or Iraq. On July 16, U.S. Air Force, French, and Royal Air Force aerial refueling crews flew 59 sorties and off-loaded approximately 2.6 million pounds of fuel to 190 receiving aircraft. [A platform not represented in this summary, but commonly used every day during operations in this area, is the AC-130 *Specter* gunship operated by the U.S. Air Force Special Operations Command. Variants of the AC-130 carry a mixture of 105mm, 40mm, 30mm, 25mm, and 20mm canon, and other armaments, all with precision fire control systems.] Taken from "Airpower Summary for July 17." Al Udeid Air Base, Qatar: U.S. Air Forces Central, 2008.

employ the resultant forces. This section deals with those three fundamental service

responsibilities, leading to discussion in the third part of the chapter about how well the joint-

force organizational construct worked in its employment of COIN air power.

D. Close Support Improvements: Equipment, Training, and Organization
CAS and ISR improvements after 2001 occurred across a broad spectrum of technological

innovation, improved tactics, and refined command-and-control procedures. This summary

introduces these changes grouped into categories of *equipment* (mostly improvements in

airframes, weapons, electronics, and other technology), *training* (the repeated practice military

personnel, especially soldiers and Airmen, received prior to deploying), and *organization* (the

way air and ground units were assigned by commanders to provide mutual support to each other).

The narrative introduces improvements in approximate chronological order of their appearance,

though almost any increase in capability underwent subsequent fine-tuning. Table 5.1 (page 326)

summarizes these advances.

1. Equipment
The most tangible and numerous improvements in the ability of the U.S. military to successfully

execute CAS and ISR missions in direct support of COIN ground forces are weapons and sensor

technology, now in routine use, that did not exist, or existed in much more primitive forms, in

2001.

Manned and unmanned aerial reconnaissance
One of the biggest changes over the battlefields of Afghanistan and Iraq was the increase in

persistent air surveillance from manned and unmanned aircraft. Starting with a reference point of

2004, there were an equivalent of three *Predator* combat air patrols (CAPs) in the CENTCOM

region (two in Iraq, one in Afghanistan).[780] Several hundred MQ-1 *Predator* and MQ-9 *Reaper*

aircraft plied a total of sixty-two full-time UAV-ISR CAPs at the end of 2013, a twenty-fold

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[780] Keven Gambold (Chief Operations Officer, Unmanned Experts LLC), personal interview with the author, 12 November 2013.

increase.[781] The organizational change necessary to support such growth is remarkable, especially given the Air Force's institutional reluctance to provide tactical ISR support, and the fact that it came from a platform that was a mere technology demonstration in 1995. The training and organizational effort needed to fuel the increase in hardware is a major topic of the next two sections.

A marked increase in capacity in no way indicates that the Air Force completely met joint force commanders' desires for increased UAV-ISR capability, however. A measure of how far short of the ground commanders' desired support level the Air Force fell comes from counting the UAVs acquired by the Army: as of October 2013, the Army possessed seventy-five *Gray Eagles* (a larger *Predator*-like UAV with similar capabilities), with plans to acquire a total of 152 aircraft and thirty-one ground control systems.[782] This total compares with the Air Force total buy of just over seven hundred RQ-1, MQ-1, and MQ-9 *Predators* and *Reapers*.[783] However, the Army and Marines operate more than six hundred *Hunter* and *Shadow* aircraft, and the Army alone has more than *six thousand* of the hand-launched micro-UAVs including *Raven, Puma,* and *Wasp.*[784]

Numbers like these bear out the admission of Army personnel that the service's appetite for organic UAV capability is "insatiable. It's like crack, and everyone wants more," said Brigadier General Kevin Mangum, who commanded a special operations unit in Iraq during the first

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[781] Caitlin Lee, "USAF Debates Reduction in UAV Orbits," *Jane's Defence Weekly*, 13 November 2013. http://www.janes.com/article/30052/usaf-debates-reduction-in-uav-orbits.
[782] As with most UAV platforms, one *Gray Eagle* "system" consists of multiple aircraft and an associated ground control station. *Gray Eagle* uses four aircraft per system. See "Defense Acquisitions: Assessment of Selected Weapon Programs." Washington DC: U.S. Government Accountability Office, 2013, 101.
[783] "Warplanes: UAV Growth Continues," Strategy Page, accessed 4 February 2014, http://strategypage.com/htmw/htairfo/articles/20121030.aspx.
[784] Ibid.

deployment of *Gray Eagle* in 2009, which was then called *Sky Warrior*.[785] Coincidentally, the

magnitude of growth of hand-launched UAVs closely matches the growth of the Vietnam

helicopter force, which swelled to about five thousand during the period from 1965 to 1969.

Advanced Targeting Pods
Prior to the beginning of OEF, the Air Force had recognized the need for better targeting pods

with which to equip its multi-role fighter aircraft. Existing infrared (IR) pods were suitable for

finding large, fixed targets (for example, large weapons depots or military headquarters) of the

kind that would be encountered in deep interdiction missions. For concealed targets and

investigating urban areas where collateral damage was a serious concern, however, the limited

acuity of these pods was a genuine liability. The Air Force began to acquire the Sniper, a

combined television/IR targeting pod with three to five times the resolution of legacy LANTIRN

pods, in August 2001.[786, 787] The first Sniper pods went to the F-16 to enhance its air-to-ground

capabilities, and the system debuted on the F-15E in early 2005.[788] Eventually, all Air Force

CAS platforms received the capability to carry Sniper, which gave aircrew the capability to

generate target coordinates precise enough to employ GPS-guided munitions against stationary

targets. At about the same time, acquisition of the Israeli-designed Litening, with capabilities

similar to the Sniper, commenced in the U.S.[789] Air National Guard, Navy, and Marines Corps

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[785] "Army: Tremendous Demand for UAVs in Afghanistan," *Army Times* 2010.
http://www.armytimes.com/article/20101216/NEWS/12160320/.

[786] LANTIRN stands for "low-altitude navigation and targeting infra-red for night," a two-pod system designed for the F-16 and F-15E. In Air Force jargon, "LANTIRN pod" usually referred to the targeting pod component of that system; "TF pod" came to indicate the terrain-following radar pod that provided the low-altitude terrain avoidance features of the system.

[787] "In Brief — USAF Orders Sniper Targeting Pods," *Jane's Defence Weekly*, 12 July 2002. https://janes-ihs-com.aufric.idm.oclc.org/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1164594&Pubabbrev=JDW.

[788] "In Brief - F-15E Debuts with Targeting Pod, Bomb," *Jane's Defence Weekly*, 14 January 2005. https://janes-ihs-com.aufric.idm.oclc.org/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1172606&Pubabbrev=JDW.

[789] "In Brief - USMC Orders Litening Pods," *Jane's Defence Weekly*, 3 August 2001. https://janes-ihs-com.aufric.idm.oclc.org/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1161195&Pubabbrev=JDW.

platforms tended to incorporate the Litening pod, and the addition of two advanced pods in the

high numbers in which they were purchased dramatically increased the capability of CAS

platforms to identify features of interest to ground forces and target them when appropriate.

In 2010, the Air Force began to upgrade all of its Sniper and Litening pods with improved-

resolution sensors and two-way data-links, demonstrating that capabilities essential to CAS over

the past decade had become fully entrenched in the tactical fleet.[790] Software upgrades to the

pods provide video overlays, showing unique symbology for entities designated friendly or

hostile over tactical data-link networks. They also provide the capability to display range rings

on target pod video, a quick way to determine if ground forces are too close to the intended point

of impact for requested CAS munitions. New targeting pods act as a datalink relay for ground

forces, allowing units to send each other video imagery by routing signals through pods without

necessarily communicating with aircrew at all.[791] The Navy began similar initiatives for its

advanced targeting pods, determining that a long-term investment in CAS capability was

appropriate for its tactical-air fleet.[792] While the capabilities of advanced targeting pods are

indisputably useful for providing faster, more precise CAS, their ability to interface with one-

and two-way video terminals carried by CAS controllers provides an integration capability that is

an order of magnitude better than anything enjoyed in previous CAS-intensive conflicts.

Air-Ground Video Interface Stations and Imagery
The first linking of full-motion video feeds gleaned by UAV aircraft to other airborne platforms

occurred in November 2001, when specially designed antennae and equipment installed by the

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[790] Michael J. Gething, "USAF Launches Sensor Upgrade for Sniper and Litening Pods," *Jane's International Defence Review*, 28 October 2010. https://janes-ihs-com.aufric.idm.oclc.org/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1107533&Pubabbrev=IDR.
[791] Samuel King, Jr., "Air Force Begins Testing New Pod Capability," 25 January 2013, http://www.wpafb.af.mil/news/story.asp?id=123333836.
[792] Matthew Maloney (Lieutenant Commander, USN; F/A-18 pilot), telephonic interview with the author, 12 December 2013.

Air Force's Big Safari office allowed AC-130 gunships to see *Predator* video feeds over

Afghanistan.[793] Late in 2001, a request from an especially motivated Army soldier, Chief

Warrant Officer Christopher Manuel, led to testing of video receivers for use by ground units.[794]

Remarkable efforts in 2003 by Lieutenant Colonel Gregory Harbin continued to propagate the

system through Afghanistan and Iraq, making it a "must-have" for more and more ground

commanders.[795] By 2005, the Air Force recognized that the wide introduction of lightweight,

man-portable Rover video terminals, which allowed a JTAC to see on the ground exactly what

aircrew saw in their targeting pod displays, would provide a leap forward in CAS capability.

General Jumper insisted on including a feature on follow-on Rover systems that allowed ground

parties to draw on their screens, highlighting to aircrew points of interest. JTACs returning from

operations in Iraq or Afghanistan remarked, "We used the system just about every day."[796] With

Rover, JTACs had less doubt whether they and the aircrew with whom they worked had located

the same target. By extending the visibility of the targeting pod to the JTAC, CAS platforms

allowed ground commanders a view of the battlefield without the risk of exposing themselves to

enemy fire on high-ground vantage points. Integration of Rover to all CAS platforms and UAVs

happened quickly, expedited by enthusiastic support from the Air Force bureaucracy.[797]

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[793] Rebecca Grant, "The ROVER," *Air Force Magazine*, August 2013.
[794] Julian E. Barnes, "He Helped Clear the Fog of War," *The Los Angeles Times*, 13 September 2007, 1. http://articles.latimes.com/2007/sep/13/nation/na-rover13.
[795] Harbin had traveled to show the Rover terminal to Marines in Fallujah, who immediately "fell in love" with the system, even using Harbin's *ad hoc* connections back to the CAOC to call in emergency CAS on an enemy fighting position that had been giving a battalion trouble with indirect fire for several days. Harbin sustained wounds from grenades and shelling during the firefight, and reported back to his supervisor with blood still caked around his ears and nose, his eardrums and sinuses traumatized by the blast. However, as he recounted his story to a colleague in the mess hall, an executive assistant to Secretary Roche overheard him and insisted he brief the need for Rover in person to the Secretary, who happened to be visiting the same base. The ensuing presentation ensured immediate high-level attention on the system, development of compatible video sources, and rapid deployment of Rover terminals throughout the CENTCOM AOR to ground units; Bochain Interview, 24 January 2014.
[796] Kevin Krooner (Staff Sergeant, U.S. Air Force; Joint Terminal Attack Controller (JTAC)), remarks to Jane's Defence Weekly, January 2006.
[797] Harbin interview re: Roche reaction…(if available)

By 2010, fifth- and sixth-generation Rover terminals had the capability to provide communications links among tactical UAV users, as well as to provide full-motion video feeds to the strategic ISR network of UAV ground stations.[798] Rover, unimagined in the 1990s, solved many of the frustrations of CAS as well as some of the precision target location issues associated with UAVs, although it still represents efforts to stitch disparate systems together rather than build them as compatible entities.[799]

The burgeoning growth of CAS platforms (manned and unmanned) along with advances like Rover and the ability to provide feeds to any ground control station has created a watershed moment for the amount of ISR data available to commanders. "With the arrival of digital imagery from photo-recce, plus the fallout imagery from other applications such as surveillance and targeting…the potential raw material available for exploitation has mushroomed exponentially. Add to this imagery resulting from the equivalent revolution in military…sources…and the amount of imagery available for exploitation is vast."[800] The intelligence-intensive nature of COIN warfare that Corum and Johnson described was in full

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[798] "ROVER Develops Into All-Purpose Battlefield Comms System," *Jane's IHS International Defence Review*, 25 November 2010. https://janes-ihs-com.aufric.idm.oclc.org/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1107600&Pubabbrev=IDR.

[799] For all its promise and utility, Rover represents a second-rate compromise in achieving what is known as "digitally assisted CAS," the linking of all known air and ground entities on a common datalink system, allowing near-perfect situational awareness of the disposition of friendly troops and quick targeting of hostile formations. Major Bill Harvey of the Air Land Sea Application center said, "Even though we've been talking about D[igital] CAS for years, we always seem to be waiting for one more implementation step before it becomes a reality." The biggest obstacle to creating a unified battlefield network is system compatibility. As services and even individual combat systems develop new capabilities, they are rarely compatible with existing technology, requiring elaborate and costly third-party solutions for integration, if they can be integrated at all. William Harvey (Major, USMC; Joint Action Officer, Air Land Sea Applications Center), personal interview with the author, 22 January 2014.

[800] Michael J. Gething, Scott R. Gourley, and Joris Janssen Lok, "Imagery Intelligence - Boom Time for Image Intelligence as Digital Exploitation Burgeons," *Jane's International Defence Review*, 7 November 2006.

view in OEF and OIF, and the new technologies used to gain an advantage fomented change within the military organizations that exploited them.[801]

Wide integration of laser designators and range finders
Devices that can send a beam of laser energy to a target ('designators') or detect reflected laser energy ('seekers;' and, if they can determine distance as well, 'range finders') have become an essential part of CAS capability, both for airborne platforms and as part of the equipment kit that JTACs carry. Only weeks into the Afghan conflict, General Jumper frequently shared the story of "the young Special Forces troop, out there in the hills of Afghanistan, riding a horse and carrying a laptop computer hooked up to a satellite, using laser goggles to put a precise designation on targets."[802] Jumper's first experience as a senior leader integrating laser designators and range finders into new combat systems was with *Predator* in 1999, giving the platform the ability to provide target coordinates to fixed-wing strike aircraft in addition to full-motion video of areas of interest.[803]

Airborne-laser designators have been in use since at least 1968, when the first 'smart' guided bombs struck targets in North Vietnam. In the initial implementation of the technology, a laser designator shone a beam on the target from a pod attached to a 'guider' aircraft. An accompanying 'mule' dropped the bomb in a pre-calculated envelope that gave the weapon and its guidance apparatus the best opportunity to acquire the reflected laser energy and follow the

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[801] The development of digitally assisted CAS and ISR in the era of OEF and OIF provides a good example of a socially constructed system, as military entities directly controlled or had influence over every part of the system, including the structures of the organizations employing them. It was up to disparate "heterogeneous engineers" to determine how the new technologies would influence the overall system, though. See, e.g., Hughes, "The Evolution of Large Technological Systems," 52-53; Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," 112-13. In Law's formulation, system elements are equally weighted; the social, or human decisional element, is less "privileged" than it is in Hughes' and others who favor the social element more than other parts of the system.

[802] Tim Dougherty, "Jumper: Ingenuity is Key to Transformation," *Air Force Print News*, 21 March 2002. http://www.european-security.com/n_index.php?id=2916.

[803] Jumper's first experience with laser-guided weapons happened in January 1970 when he and C.R. Anderegg, acting in a FAC(A) role while flying an F-4D, guided a flight of F-4s equipped with the Pave Knife system, a new targeting pod that allowed the same aircraft to drop and "lase" its own weapon to hit a target; see C.R. Anderegg, *Sierra Hotel: Flying Air Force Fighters in the Decade After Vietnam* (Washington DC: U.S. GPO, 2001), 29-31.

beam to the target. Improvements led to gimbaled targeting pods that allowed a systems operator to 'self-lase' a target throughout the time of flight of the weapon until impact.[804]

As with much of the other military hardware described in this section, handheld systems of this type pre-dated even the Afghan conflict. The Handheld Command and Control Wireless Communications (HC2WC) system, a development of the Joint Expeditionary Digital Information (JEDI) system, existed in mid-2001 and was comprised of a soldier pack and a base station. The soldier's pack included "a rugged palmtop computer, GPS receiver, laser range-finding binoculars, and a satellite handset"—it is precisely the kind of system over which Jumper enthused.[805]

OEF and OIF witnessed the first widespread use of hand-held laser designators by JTACs. In concert with GPS and a computer display that provided a 'moving map' of the JTAC's position and surrounding terrain, the handheld designators could be used to generate target coordinates. As advanced targeting pods became more common, their ability to lock on to reflected laser energy meant that a JTAC could simply point his designator at a target and aircrew would quickly acquire it, assuming environmental conditions allowed. Designators evolved to have additional capabilities, including infrared beams that were compatible with the night vision goggles aircrew wore. Again, the effect was to reduce the time required to talk or otherwise communicate aircrew's 'eyes on' to a target or friendly forces. As the wars continued, the capabilities of these multi-purpose systems increased, and the batteries required to operate them became a bit more efficient and lighter to carry.

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[804] Paul Gillespie has provided a definitive history of the development of laser-guided precision munitions in Vietnam; see Paul G. Gillespie, *Weapons of Choice: The Development of Precision-Guided Munitions* (Tuscaloosa AL: The University of Alabama Press, 2006), 66-95.

[805] Mark Hewish, "Switchboards in the Sky," *Jane's International Defense Review*, 20 June 2001. https://janes-ihs-com.aufric.idm.oclc.org/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1099060&Pubabbrev=IDR.

Advanced targeting pod integration on heavy bombers
Air power employment in COIN conflict kept up the pressure for targeting pods that provide

improved resolution of the battlefield for aircrew and, via the air-ground video data links already

described, for the TACPs with whom they interact. As described, advanced targeting pods also

have the ability to detect and lock on to encoded pulses of laser energy, which makes target

location a matter of parsimonious communications. However, prior to 2006, targeting pods

operated routinely only from multi-role fighter or attack aircraft. After Air Combat Command

received authorization for advanced targeting pod integration testing on the B-52 in 2002, the

first combat use of the pod occurred in April 2003. There was a lag in the full implementation,

but the first active duty B-52 unit completed the training procedures for combat use in July

2006.[806]

Though bomber aircraft had been involved in providing CAS since the beginning of OEF

hostilities, aircrew had been reliant on outside sources for precision coordinates or laser

designations to deliver accurate GPS- or laser-guided munitions. For the B-1, which carried the

largest and most diverse weapons load in the extant Air Force inventory, an urgent need

statement in 2006 led to the first successful test of the capability in 2007 and combat capability

by 2008.[807]

GPS-guided munitions
Like *Predator*, the Joint Direct Attack Munition (JDAM) GPS-guided precision munitions saw

their initial combat in the Balkan conflicts of the 1990s. The 2,000-pound version of the JDAM

was developed starting in 1997 and first used over Kosovo in 1999. GPS-guided weapons offer

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[806] After a very quick initial operational capability (IOC) on the B-52, further integration and normalization of ATP operations slowed after a training accident. The venerable bomber has, however, retained LGB capability since before and throughout OEF and OIF, using third-party air- or ground-based designators if not reliant on its own targeting pod; John R. Edwards (Lieutenant Colonel, U.S. Air Force, Joint Staff J8; former B-52 instructor WSO, U.S. Air Force Weapons School (2003-2006)), e-mail exchange with the author, 5 February 2014.
[807] See "Air Combat Command Fact Sheet: B-1 Sniper Pod," Air Combat Command Office of Public Affairs, accessed 23 January 2014, http://www.ellsworth.af.mil/shared/media/document/AFD-080606-047.pdf.

true all-weather capability, as they will guide to target under any atmospheric conditions

provided an accurate satellite signal is present. The other requirement, of course, is that the

weapon be given accurate coordinates to which it can guide, and no weapons system is immune

to fratricide- or collateral damage-inducing user error. A notable instance occurred in late 2001,

when a JTAC, while calling in air strikes in support of U.S. Special Forces and Afghan anti-

Taliban troops under the leadership of Hamid Karzai, sent a B-52 his own coordinates. The

2,000-pound JDAM dropped in response killed three U.S. soldiers, put to death five allied

Afghans, and injured forty others. The JTAC in error had changed a battery in his GPS receiver,

causing it to default to displaying its current position rather than the enemy position he had

identified using a separate range finder.[808] Fortunately, errors of this kind were rare, and CAS

tactics soon incorporated steps to crosscheck friendly positions against proposed weapons

delivery locations.

Hybrid (GPS- and laser-guided) munitions and low-yield munitions
Included in the abundance of new munitions developed since 2001 are many specifically adapted

to meet the challenges of COIN warfare. Since intelligence about elusive insurgent leaders is

often fleeting, the need to quickly locate, track, and destroy moving targets may spell the

difference between success and failure in targeting an enemy's network. GPS weapons allow

precision strikes beneath the weather, but they are almost always ineffective against moving

targets. Laser-guided weapons, in concert with some of the training methods discussed later in

this section, provide an opportunity to hit moving targets, but exclusive use of laser-guided

weapons removes some targeting flexibility in unpredictable weather.

Hybrid weapons, which can use either or both GPS and laser guidance to find a target,

offer the flexibility of two separate guidance methods. A JTAC can provide precise coordinates

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[808] Mark Burgess. "Killing Your Own: The Problem of Friendly Fire During the Afghan Campaign." Washington
DC: Center for Defense Information, 2002.

for a given target, and aircrew can in turn use the accuracy of a GPS weapon to hit it. However, if that target subsequently becomes a 'mover,' or if a higher-priority target emerges in close proximity, the crew has some latitude to guide the weapon to a different terminus. The first combat use of the GBU-54, the Air Force's 500-pound hybrid laser-GPS bomb, occurred in Iraq in 2007.[809] The Navy accepted its initial delivery of the weapon in 2008, and designated it to fulfill its requirement for attacking moving targets in 2010.[810]

A final word is in order about the 'improved' munitions used for CAS. Corum and Johnson stressed the point that bombing civilians while attempting COIN is particularly damning to the effort; collateral damage caused by errant or oversized weapons tends to increase the number of people devoted to the insurgent cause.[811] This reality led to several efforts to decrease the likelihood of unintended civilian casualties. Even with the utmost in precision, some weapons are simply too large to be used against a legitimate target without the unintended consequence of destroying or killing something or someone nearby. To this end, the services have developed smaller bombs with fuzes and other modifications that provide limited blast and fragmentation effects.[812]

The 500-pound JDAM (GBU-38) moved rapidly into use in Afghanistan as an alternative to the 2,000-pound GBU-31 when operations transitioned to COIN-intensive efforts that required limits on collateral damage. When *Predator* received the ability to strike targets in 2001, the reason for arming it with *Hellfire* was that the laser-guided missile's small size made it the only

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[809] "Laser Guided JDAM Debuts in Iraq," *Defense Update*, 27 August 2007. http://defense-update.com/20070827_laserguidedjdamdebutsiniraq.html.

[810] "Navy Awards Boeing $23 Million for Laser JDAM," *Defense Update*, 7 September 2012. http://defense-update.com/20120907_navy_laser-jdam.html.

[811] Corum and Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists*, 429.

[812] Robert Hewson, "On Call: Honing Weapon Effects for the Close Air Support Role," *Jane's International Defence Review*, 21 July 2008. https://janes-ihs-com.aufric.idm.oclc.org/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1105688&Pubabbrev=IDR.

weapon the UAV could reasonably carry.[813] While the 109-pound weapon allowed for precise

engagement of moving targets, an unforeseen COIN advantage was that its twenty-pound

warhead also prevented excessive collateral damage.[814]

Another low-yield weapon to be deployed in this era was the 250-pound GBU-39 small-

diameter bomb (SDB), a GPS-guided weapon (in its first iteration) that also increased standoff

capability with its glide characteristics. Requirements for the SDB, including moving-target

capability, are still being finalized. While the F-15E was the first U.S. CAS platform to get

complete SDB integration as early as 2006, the weapon saw limited use in combat, primarily

because its long glide times made it undesirable to ground commanders who wanted to strike

potentially fleeting targets without several minutes intervening between weapon release and

impact.[815] A future variant in development will address these issues and provide multi-modal

terminal guidance methods, adding three means of moving-target engagement to the basic fixed-

target GPS capability.[816]

Precision Visualization, Mapping, and Targeting Systems
The individual tools such as laser designators, GPS receivers, and video receivers are of scant

value to JTACs if they cannot assemble the various pieces of information to create a contextually

meaningful representation of the battlefield they want to influence. Mapping systems, usually

mounted on a rugged laptop computer, meet this need by showing pertinent data on a static or

moving display. There is a tradeoff between advanced technology and the urgency of war. As

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[813] Walter J. Boyne, "How the *Predator* Grew Teeth," *Air Force Magazine*, July 2009, 44.
[814] "AGM-114R Multi-Purpose Hellfire II," Lockheed Martin, accessed 4 February 2014,
http://www.lockheedmartin.com/content/dam/lockheed/data/mfc/pc/hellfire-ii-missile/mfc-hellfire-ii-pc.pdf.
[815] This statement reflects the author's experience with SDB in the Afghan theater. The SDB was rushed into use on
the F-15E, and carriage issues as well as the irksome time-of-fall issue made limited its use as a CAS weapon.
[816] "Moving Target: Raytheon's GBU-53 Small Diameter Bomb II," *Defense Industry Daily*, 5 November 2013.
http://www.defenseindustrydaily.com/raytheon-wins-usas-gbu-53-small-diameter-bomb-competition-06510/. Of
note, both first- and second-generation SDB development has been impacted and delayed by the Boeing-Darlene
Druyun corruption scandal. The first SDB was a Boeing product, while the follow-on contract was awarded to
Raytheon.

British Squadron Leader Paul White, a JTAC, remarked, "You don't want to be typing into a terminal when you are being shot at, nor do you want to have to stick your head above the parapet to point a laser designator."[817]

Improved communications systems
Reflecting a challenge that has existed since WWI, communication with ground forces via radio links proved difficult in Afghanistan and Iraq. In Afghanistan's topography, rugged terrain often denied the unbroken 'line-of-sight' required for air-ground radio communications to work. Several means of overcoming this difficulty arose, the simplest being the adaptation of airborne relays: an aircraft (including a UAV) airborne over a ground party's location could relay radio transmissions from the ground to a more distant aircraft that would otherwise not hear the transmission. This adaptation occurred as a matter of necessity during the first air-ground battles fought in both Afghanistan and Iraq.

The next increment of adaptation came with the installation of radio transceivers more capable of communicating on the frequencies commonly used by ground units and their associated air liaisons. Again functioning as a bellwether that indicated the Air Force's embrace of the CAS mission across all platforms, the F-15E, beginning in 2006, received upgrades to carry VHF-AM and VHF-FM radios, allowing improved communication with JTACs and Army units, respectively.

Afghanistan's rugged terrain also inspired the installation of satellite communications (SATCOM) terminals in many different CAS aircraft and the allocation of sufficient bandwidth to allow its routine use. Since SATCOM signals effectively go 'straight up' and come 'straight down,' they are not subject to the same interference faced by UHF or VHF signals in a steep mountain valley or urban canyon. This was the final major communications innovation realized,

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[817] Rupert Pengelley, "In CAS of Emergency, Contact the Universal Observer," *Jane's IHS International Defence Review*, 1 April 2004.

with testing beginning in late 2008 and installation to the fleet in 2009; the F-16 received a

similar upgrade in 2009-2010.[818]

Datalink Integration
Known by names including Link 16, JTIDS, SADL, Blue Force Tracker, and others, wireless

data-links provide data about friendly force position, movement, weapons states, and other useful

information.[819, 820, 821] They also allow shared targeting across multiple platforms and the 'cross-

cueing' of sensors to rapidly home in on unknown entities and ascertain hostile or benign

intentions. While these systems face integration challenges and have not yet achieved the

penetration originally promised with their introduction, they have steadily improved since 2001

and have undeniably made the sharing of data, with or without radio communications, easier

among the U.S. and coalition forces fighting in the CENTCOM area of responsibility.

New technology does not serve the cause of jointness if military personnel do not

understand how to employ it. Having described some of the equipment and technology

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[818] Cynthia G. Zessin et al. "Can You Hear Me Now? F-15E Enhanced Radio Test Using DOE." Eglin AFB: 76th MORS Symposium, 2008.

[819] Joint Tactical Information Distribution System (JTIDS) is an L-band, time-division multiplexing architecture (TDMA) radio system capable of implementing the Link 16 military standard. It is widely used throughout the Air Force and Navy.

[820] Situational Awareness Data Link (SADL) was an implementation in F-16 and A-10 aircraft of the Army's Enhanced Position Location Reporting System (EPLRS), the architecture used to implement FBCB2 (see below). The bottom line is that SADL is compatible with certain Army systems (and is why it was adopted by aircraft dedicated to the CAS mission, especially Air National Guard F-16 and A-10 units), but it does not communicate with Link 16 systems without a separate integrating system. An understated phrase that captures the lack of compatibility comes from a research report on Blue Force Tracker systems: "Integration of ground BFT systems with air systems based on Link-16 is still in the future." Charles Jacobus et al. "A Personal Blue Force Tracking System." Ann Arbor MI: Cybernet Systems Corporation, 2004.

[821] While all the systems listed are wireless data links that enhance friendly force situational awareness, direct comparisons are sometimes wanting, both because of imprecise usage and system capabilities. For example, Link 16 is a military standard (comprised of message types and radio waveforms); JTIDS terminals are a specific kind of radio that implements the Link 16 standard. Blue Force Tracker is a separate network of transceivers and radio signals that implements the Army's Force XXI Battle Command Brigade and Below (FBCB2). It does not use the near real-time update frequency of Link 16 equipment, with platforms transmitting position information every five or 10 minutes. However, interface links designed for Blue Force Tracker may give it the capability to interface with Link 16-compatible systems. Maryann Lawlor, "Keeping Track of the Blue Force," *Signal Online*, July 2003. http://www.afcea.org/content/?q=node/127. Among the few platforms able to integrate and retransmit both standards are the Air Force's E-3 Airborne Warning and Control System (AWACS) and E-8 JSTARS. See Stephen Fox, "JSTARS Adds Blue Force Tracking Capability," 19 January 2006, http://www.globalsecurity.org/military/library/news/2006/01/mil-060119-afpn04.htm.

innovations that have increased CAS and UAV-ISR capacity and capability since 2001, the next

section provides an overview of the training schemes developed to make operators proficient in

their use.

2. Training
Terminal Air Controllers
Far from the neglect characteristic of peacetime years, the training of both terminal air

controllers and aircrew witnessed significant effort across the services as they waged COIN-

intensive war in Afghanistan and Iraq. The now-defunct U.S. Joint Forces Command acted to

harmonize CAS procedures across all services, worked with the Air Force to create a simulator

that could train terminal air controllers faster to the level of desired proficiency, and certified all

controller training schools to a common standard.[822]

While increasing the number of ETACs and, later, JTACs remained a priority, their

integration into meaningful pre-deployment training meant that CAS-capable aircrew also had

more opportunities to hone the skill sets required for the urban and rough-terrain environments

encountered in the countries of interest.[823] Aircrew completing 'spin-up' training for CAS-

intensive deployments could expect to receive several dozen chances to interact with JTACs in a

live training scenario, perfecting the difficult art of identifying a target or friendly formation to

an aircraft using only words. As the equipment and ordnance available for executing CAS

improved, these training opportunities offered chances to improve procedures for using video

data links by which JTACs saw the same targeting pod video that aircrew monitored, greatly

increasing the speed and verifiability of CAS 'talk-ons.'

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[822] Pengelley, "In CAS of Emergency," online service.
[823] Prior to many of the revisions of CAS doctrine, procedures, and organization, two Air Force Enlisted Tactical Air Controllers (ETACs) typically comprised a Tactical Air Control Party (TACP). Verbiage has shifted to reflect broader participation in CAS, so that anyone qualified to give final clearance for a CAS weapons release is now called a Joint Terminal Attack Controller (JTAC) regardless of rank or the medium and platform from whence they direct CAS. Current joint doctrine rather cumbersomely makes a distinction between the terms JTAC and FAC(A), though it emphasizes their qualifications to control CAS are identical "Joint Publication 3-09.3: Close Air Support," (Washington DC: Joint Chiefs of Staff, 2009), ix.

Affirming an oft-expressed Army sentiment that "there can never be enough JTACs," the

Army's artillery branch began training forward observers (FOs) on joint CAS procedures. While

these soldiers were not fully certified as terminal controllers, they attained a familiarity with

CAS procedures that allowed them to interface with JTACs, extending the range over which

CAS assets could operate with a single controller.[824] Major General Mike Maples, a commander

of the Army's field artillery branch, made a call for the Air Force to reciprocate and train its

JTACS to control the Army's long-range artillery systems, but proposals for a "universal

observer" did not gain the same traction that improved JTAC training did.[825] The Marines made

similar efforts, expanding training opportunities for FOs and using them routinely to extend the

range at which JTACS could provide 'Type II' CAS control.[826]

UAV Training Pipelines
The leap in manning required for the twenty-fold increase in UAV orbits realized after 2003 was

significant. The Air Force had just fifty UAV pilots in 2001; by 2013 it had over 1,300.[827] Even

more dramatic was the intelligence "tail" required to support the constant data feeds pouring in

from each CAP, estimated at twenty to forty personnel per orbit.[828] Two operators—a pilot and a

sensor operator—manned each remote UAV control station at a time; additional personnel

ensured airspace coordination. To allow for twenty-four-hour manning, the ratio for each of

these positions was between seven and ten personnel to each CAP. Adding to this manning

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[824] "In CAS of Emergency," online service.

[825] The Army's Tactical Missile System (ATACMS) is a surface-to-surface missile with a range in excess of 100 nautical miles. Due to its long range and the airspace control measures needed to keep it from affecting other air assets, firings of the system are still centrally controlled with awareness of the air operations center.

[826] Formal CAS procedures as defined in joint-tactical publications divide CAS into three types of control: Type I means that the JTAC giving final ordnance-release clearance sees (or otherwise has in view through sensors) both the target and the delivery aircraft. Type II means he sees one or the other, and Type III means he sees neither. FOs are considered a "sensor" for the JTAC, and their ability to see a target means the JTAC can effectively clear an aircraft for Type II CAS on a target that he could not otherwise see without the FO's assistance; Harvey interview, 22 January 2014.

[827] Michael Peck, "Why Can't the U.S. Air Force Find Enough Pilots to Fly Its Drones?," *Forbes*, 22 August 2013. http://www.forbes.com/sites/michaelpeck/2013/08/22/why-cant-the-u-s-air-force-find-enough-pilots-to-fly-its-drones/. See also Aaron M. U. Church, "Are RPA Pilots the New Normal?," *Air Force Magazine*, April 2014, 36.

[828] Deptula interview, 5 December 2013.

requirement was a requirement for roughly twenty intelligence personnel to process the sensor

data coming from the aircraft at distributed ground stations (DGSs) at Creech AFB, Langley

AFB, Beale AFB, and other locales. With so many people directly supporting each CAP, plus

additional administrative and maintenance requirements, the manning 'bill' for ISR operations

grew precipitously with increased in-theater orbits.[829] This in turn required the rapid build-up of

training units to graduate personnel qualified in all facets of the UAV mission. Though the

intelligence personnel requirement was significant, both subject-matter experts and official Air

Force reports hold that pilot training was the biggest inhibitor of faster growth.[830] The center of

the UAV training universe—Creech Air Force Base, Nevada—addressed these challenges.

In spite of the dramatic increase in UAV CAP capacity, by 2014 the Air Force had not

"normalized" the manning ratios for the aircraft it operated.[831] In plain language, this means that

crews did not get to conduct the non-combat practice skills training (called 'continuation training'

in Air Force parlance) that would be expected for a sustainable long-term force.[832] This reflects

the growing pains that accompanied the break-neck pace of UAV capacity development and

constant surge operations in Iraq and Afghanistan. It may also reflect an enduring Air Force

predilection to move away from the tactical UAV enterprise, though a consistent message from

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[829] An Air Force presentation released in 2010 put the full-time manning required to operate a single UAV CAP at 162, including all operators, analysts, and launch-and-recovery personnel; "CAP Requirements: Single 24/7/365 MQ-1/9," (Washington DC: U.S. Air Force, 2010). The Air Force's 2009 report on future UAV capabilities projected a UAV "community" of 15,000 personnel to operate approximately 60 CAPS, or 250 people per CAP. The discrepancy reflects the Air Force's

[830] "Unmanned Aircraft Systems Flight Plan, 2009-2047," U.S. Air Force Report, 18 May 2009, http://www.fas.org/irp/program/collect/uas_2009.pdf; James Gear (Vice President of Strategic Business Development, L-3 Unmanned Systems), telephonic interview with the author, 18 November 2013; Joseph L. Campo (Lieutenant Colonel, USAF; Commander, 26th Weapons Squadron (MQ-1/MQ-9 UAS training), U.S. Air Force Weapons School), telephonic interview with the author, 19 November 2013.

[831] Church, "Are RPA Pilots the New Normal?," 36.

[832] Campo Interview, 19 November 2013.

the Air Force has been that the UAV career field, along with an accompanying Rosenian path to

career advancement and command, are here for the long term.[833]

The U.S. exit from Iraq and an impending wrap-up in Afghanistan have provided an

opportunity for transition, as do predictions of warfare against peer enemies in expansive, highly

contested theaters. Those knowledgeable about ISR capability interviewed for this study

suggested that the best way to keep the ISR platform infrastructure viable within the Air Force is

to rethink the platforms as part of a strategic, non-COIN air war. A strategy like this anticipates

the Air Force's historic post-conflict treatment of COIN-specific airframes. Such thinking

reflects an instinctive grasp of institutional culture by those who are the most ardent advocates

for keeping a robust UAV enterprise extant in the Air Force. Inasmuch as the aide-de-camp to

the Air Force Chief of Staff derides the existing UAV ISR capability as "65 Caps [*sic*] of soda

straws" in his facebook feed, there is evidence that the Air Force does not fully believe its

mission equilibrium in this specialty is at hand.[834]

Moving-target tracking and strike
The capability to hit moving targets existed at the outset of both the Afghan and Iraqi conflicts. It

takes focused and repeated training to master the art, however. Capability improved throughout

the Air Force as aircrew—especially those who had not performed extensive CAS previously—

practiced on special ranges to become proficient at this unique skill. Prior to the development

and fielding of hybrid GPS-laser-guided munitions, the only options for striking moving targets

from the air were with a laser-guided munition or an aircraft's internal cannon. Strafing

'movers'—shooting a CAS platform's twenty- or thirty-millimeter cannon at a relatively small

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[833] "Are RPA Pilots the New Normal?," 37-38.
[834] The full post provides a view of both CAS and ISR: "Uh, missing the forest for the trees? Like, 65 Caps of soda straws being the most important thing in a global superpower Air Force? Or 12 years of CAS means it is a primary mission of a global superpower Air Force in a theater-wide conflict?;" Isaac Bell (Major, USAF; Aide-de-Camp to the Chief of Staff of the U.S. Air Force), facebook post, 18 March 2014.

vehicle is an art that requires repetition to master. Even when aviators perform without fault, direct hits from weapons smaller than thirty-millimeter caliber can fail to stop some vehicles.

A more effective and widespread way to hit moving vehicles is with laser-guided munitions, but effective use of these also requires training in concert with the technology. The Air Force spent years developing techniques, procedures, and rules of thumb for effectively targeting movers using laser-guided munitions. CAS units spent extensive training time practicing the art of tracking vehicles, using advanced targeting pods and data-link systems that allowed two-ship formations to share information and always have at least one aircraft ready to make a successful attack. The fielding of hybrid weapons, improved targeting pod software, and evolved laser seekers that compensated for target movement made the task easier. Over time, aircrew became more proficient at engaging moving targets, even those they had to follow for minutes or hours, biding time until they moved away from areas where collateral damage was a serious concern.

National Training Center and Joint Regional Training Center Integration
Yet another notable change in close support training habits for COIN occurred at the Army's national training centers in Louisiana and California, where all combat-bound units undergo certification prior to deploying. The Air Force repurposed its Green Flag exercises (which formerly concentrated on electronic warfare) as CAS practice. Green Flag replaced and rejuvenated the existing Air Warrior exercise, aligning participating Air Force units with Army maneuvers taking place in the training centers at Fort Polk, Louisiana, and Fort Irwin, California.[835] The success of the training was highly dependent on the commanders who put their units through the paces in these exercises, but the simple existence of the opportunity showed that an institutional barrier to effective combined arms training had been set aside in the wake of

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[835] Stew Magnuson, "Revamped Flag Exercises Reflect New Missions," *National Defense*, December 2006. http://www.nationaldefensemagazine.org/archive/2006/December/Pages/RevampedFlag2776.aspx.

Anaconda and the initial days of Iraqi Freedom. When NTC-Green Flag training exercises worked well, they addressed General Jumper's complaint that CAS integration in the Army's NTC exercises trained ground commanders to say, "I've got those airplanes up there but they're not doing me much good." [836, 837]

Perhaps even more significant was the Air Force's revamping of its hallowed Red Flag exercise, which has traditionally been styled as MCO-level rehearsal for multi-aircraft packages that simulate the opening hours of full-scale, conventional air war. After 2006, parts of some Red Flag exercises included elements that more closely resembled the COIN fights occurring in Afghanistan and Iraq, with smaller sections of aircraft pursuing fleeting targets with the assistance of ground controllers operating in and around 'urban terrain.' The new side of Red Flag did not lose its MCO focus completely, though. The CAS-like exercises remained, per the vision of Red Flag, "more intense for pilots than actual air combat," with the pursuit of high-value targets happening in contested airspace, something that never occurred in Afghanistan or

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[836] In some cases, scheduling misalignment meant that an Air Force unit was bound for a different theater than was the Army unit with which it trained, diminishing the enthusiasm to establish meaningful relationships. Another unfortunate reality of NTC training is that some of the maneuver skills required for ground units must be rehearsed, regardless of whether a realistic application of air power might be able to neutralize the simulated enemy force. As someone familiar with the Army training system put it, "When I was a captain ALO [Air Liaison Officer] in 1988, I returned from an NTC rotation and wrote a paper on how to better integrate air power into NTC training…I could lay that paper on the table today and tell you, 'Nothing has changed.'" In many cases, though, the objectives involved in integrating air power are more complex than the training the brigade. "The Army says, 'We're spending $2 million a day for a tank battle—we're going to have a force-on-force tank battle at the NTC.' And if air power comes in and prepares the battlefield—kills all the tanks—they say, 'Why are we here?' So it rigs the system. You bring up a generation of brigade commanders who think they can't rely on air power, because when they did, they got [beaten] by OPFOR [opposing force] at the NTC;" Bochain Interview, 24 January 2014. At this writing, the quality of integration of air and ground assets in NTC exercises remains highly dependent "on the brigade commander and on the level of energy he is willing to expend on coordinating his air power while thinking of a thousand other things." Brian R. Montgomery (Lt Col, USAF; Director of Operations, 18th Air Support Operations Group), personal interview with the author, 3 January 2014.
[837] Greg Jaffe, "Divisions Over Iraq Strain NATO-US Plan for War with Iraq Hinges on Close Air Support," *The Wall Street Journal*, 11 February 2003. Army sources had voiced similar critiques of the quality of rotary-wing Army aviation with ground units; see Frank W. Tate, "Army Aviation as a Branch, Eighteen Years After the Decision" (SAMS Monograph, School of Advanced Military Studies, 2001), 42, 46-47, 50; Benjamin L. Harrison, "The Army has Failed to Fully Develop, Train and Employ Its Aviation Assets," *Army* 50, no. 4 (2000): 15.

Iraq.[838] The shift of focus, though, leaves little doubt that the Air Force reallocated significant

training resources to making sure its aircrew were better trained to support COIN missions.

'Lessons-Learned' Organizations
Directly affecting the usefulness of pre-deployment training is its pertinence to ongoing combat

operations. Units that went to OEF and, later, OIF would return with dossiers of information

about preferred tactics, techniques, and procedures for providing CAS in the unique terrain and

combat conditions of Afghanistan and Iraq. Trusted instructors, usually captains and majors who

were graduates of the Air Force's Weapons Instructor Course, would be charged to share the

information with their counterparts in other squadrons. The squadron's 'patch-wearer' would

then develop pre-deployment training plans that incorporated the latest data, enabling their units

to execute with more precision.[839]

This widespread informal practice led to the Air Force's reactivation of the 561st Joint

Tactics Squadron, an organization dedicated to collating lessons from combat and ensuring units

preparing to deploy had access to them. Major General Mike Worden's description of the

squadron implied a CAS focus, emphasizing the work the squadron did in conjunction with the

Joint Air Ground Operations Group at Nellis Air Force Base and the Air Force's Green Flag

exercises.[840] Demonstrating the institutional embrace of CAS in its training system, the Air Force

added significant discussions of CAS tactics, techniques, and procedures (TTPs) to pertinent

tactical publications, in many cases inserting a dedicated chapter where previously had existed a

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[838] Magnuson, "Revamped Flag Exercises Reflect New Missions."
[839] The term 'patch-wearer' in the U.S. Air Force is an informal name for a graduate of the Weapons Instructor Course (WIC), who is entitled career-long wear of the schools' distinctive 'bull's-eye' patch on combat uniforms. WIC graduation is rare in the Air Force and carries prestige; the term 'patch-wearer' and its slightly more jocular cousin 'target-arm' are generally used with respect.
[840] William Rondeau, "561st Joint Tactics Squadron Prepares Force, Captures Today's Tactical Issues," 6 June 2007, http://www.acc.af.mil/news/story.asp?id=123056044.

single paragraph or no mention at all.[841] The move is significant since Air Force aviators tend to

spend more time reading and studying their tactical publications than any other printed matter

that purports to hold sway over flying operations.

The Army, which has maintained a lessons-learned institution in the form of the Center for

Army Lessons Learned (CALL) since the mid-1980s, continued to glean and disperse lessons

about maneuver warfare as practiced at the national training centers and in the CENTCOM

theater. As expected, Army discussion of CAS leans more toward a doctrinal, even philosophical

viewpoint, as the typical ground unit views CAS as another 'call for fires' that can put ordnance

on a target.[842] The JTACs who interface with the air-ground control system to provide those fires

are generally Air Force enlisted personnel (or Air Force-trained special operators), so improved

CAS procedures do not impose an obligation for a great deal of extra training on Army personnel.

The notable exceptions are the increase in FOs already mentioned and the manning of more

ground liaison officer (GLO) positions, typically filled by Army artillery soldiers in Air Force

units.

Joint Air-Ground Operations Office
In October 2004, the outgoing commander of Air Combat Command announced the

establishment of the Joint Air-Ground Operations Office (JAGO) at Langley Air Force Base.

General Hal Hornburg and the office's first director, Colonel Michael Longoria, made reference

to the need to improve institutional cooperation between the Army and the Air Force. Colonel

Longoria, who oversaw air-ground operations from the CAOC during Operation Anaconda,

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[841] Air Force training, especially for aircrew, places intense focus on TTPs, which are catalogued in the service's 'tactical doctrine,' found in its '3-series' manuals. Each weapons system has a classified (3-1) and unclassified (3-3) that teaches the finer points of its employment in combat.
[842] Bochain Interview, 24 January 2014; Kraft interview, 30 January 2014.

remarked on "serious deficiencies in this air-ground domain that we can and must fix."[843] Further

elaboration of the office's role, though, revealed a concentration mostly on advanced technology

that would more quickly provide precision-targeting data to JTACs—information they could

subsequently share with aircrew through the various communications systems aboard CAS

platforms. JAGO does not seem to have resulted in substantial new doctrinal changes or

improved working relationships with the Army in and of itself, though. Research has shown that

organization and relationships, discussed next, remained chronic points of friction in spite of

remarkable equipment and training progress during the OEF and OIF era.

3. Organization
Building the UAV Force
The same difficulties that impacted CAS requests throughout modern war also plagued UAV-

ISR when it became normalized in Afghanistan and Iraq. Air Force insiders familiar with ATO

planning in the mid-2000s relate that SOF requirements created "massive pull" for UAV orbits.

Air Force efforts to stand up dedicated special operations support UAV squadrons show the

veracity of this claim. The Third Special Operations Squadron (3rd SOS) was reactivated in 2005

to operate MQ-1B *Predator* missions in support of special operations forces, and tripled in size

during the first twenty months of its current incarnation.[844] Several operators interviewed for this

investigation spoke of the inflexible grip that special operations missions had on UAV assets,

both those assigned to AFSOC [the Air Force Special Operations Command] and the

conventional Air Combat Command (ACC) UAV squadrons. SOF missions virtually always

received comprehensive dedicated air support (both manned and unmanned), and ground

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[843] "U.S. Air Force Eyes Better Integration with Army," *Jane's Defence Weekly*, 5 November 2004. https://janes-ihs-com.aufric.idm.oclc.org/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1172068&Pubabbrev=JDW.
[844] AF Fact sheet (Cannon AFB, Feb '12)

commanders were loath to release the support once a mission was underway, regardless of the apparent probability for its need.

Competing for a scarce resource with special forces operators who tended to get the support they requested, ground commanders would experiment with support requests until they found a combination of metrics and verbiage (phrases like 'dynamic targeting,' e.g.) that gained CAOC approval. Sometimes the motivation was curiosity or jealousy rather than true operational need. As one pilot recounted, some conventional Army units "didn't know what to do with you once they had you," consigning the aircraft to be a flying observer for hours in an area devoid of movement or threat.[845] In describing the relationship at the CAOC between the 'A-3' (an operational manager responsible for assigning *Predator* support to priority missions such as high-value individuals or ground troops taking fire) and the 'A-2' (an intelligence manager responsible for prioritizing ISR collection), interviewees often resorted to analogies of a dysfunctional family, a theme captured in Bryan Callahan's description of Air Force UAV command and control.[846]

The re-establishment of the 3rd SOS as an MQ-1 squadron is illustrative of the influence AFSOC and SOF support had in growing the UAV force. The squadron did not put existing SOF aircrew through a training program; rather, it divided ACC's 15th Intelligence Squadron, designating over half of its members as new members of the AFSOC UAV force, then re-growing both squadrons using an admixture of novel accession and training plans.[847] According

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[845] Gambold, K. interview, 12 November 2013.

[846] Callahan, "The Limits of Airpower in Information-Dominant Warfare," 1-2.

[847] During the most hectic growth periods, UAV squadrons grew through a program called TAMI-21 (which forced non-volunteer fighter pilots into a UAV tour), direct accessions from "normal" pilot training, a beta-test program that took non-rated Air Force officers and gave them "top-off" training, and an emergent modified pilot training that relied mostly on simulators after putting aspirants through a basic flight screening program. The Air Force was forced to "figure out the accessions plan in a square corner," leading to institutional resistance and uneven quality within the UAV operator force; Campo Interview, 19 November 2013.

to James Gear, "they wanted to grow ten CAPs indigenously in AFSOC," which spurred ever-faster growth within the conventional Air Force UAV-ISR world.[848]

Special operations missions were not the only driving force, though. As with manned CAS assets, conventional Army ground commanders, learning of the situational awareness and security that having a full-time overwatch feed gave them, became more vocal about the need for more ISR orbits. Once ground commanders benefitted from air support and learned to use tailored verbiage (pejoratively called "the CAOC's magic buzzwords" by someone familiar with the matter) in air-support requests, they could claim priority more often in the CAOC's prioritization queue. As they learned how to work the system, more 'must-do' missions entered the air-ground tasking system. A positive-feedback loop ensued, and a cry for UAV orbits reverberated all the way up the Army chain of command, through the Joint Staff, and up to the Department of Defense.

During the height of operations in Iraq and Afghanistan, the target number of air-breathing UAV CAPs continually increased. DoD's UAV action plan in 2010 that led to the 2011 "ISR surge" specified a final target of 65 orbits in 2014, and the Air Force reached a steady state of 62 orbits in 2013.[849] But this 'end state' belied the reality of an ever-moving target that was a constant source of frustration for Air Force planners after 2005. Advertised operational capability targets increased throughout the time period. The "arbitrary" increases vexed plans to stabilize training systems, procurement of airframes and ground-control facilities, and key components of the organizational architecture, including the final number and disposition of UAV squadrons.[850] Even the Secretary of Defense, by his own admission, over-reached on

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[848] Gear interview, 18 November 2013.
[849] Lee, "USAF Debates Reduction in UAV Orbits."
[850] Peck, "Why Can't the U.S. Air Force Find Enough Pilots to Fly Its Drones?." The description of ever-increasing UAV orbit targets comes from Gambold, K. interview, 12 November 2013.

occasion, stipulating a number of Air Force UAV-ISR orbits that would have "eclipsed the

sun."[851] The Air Force's organizational effort to enable the sheer increase in size of the military

UAV force was a struggle. As the next section will describe, it at times led to strife throughout

the U.S. defense hierarchy, which became a significant threat to jointness.

Operational-Echelon Command-and-Control Structures
The description of Operation Anaconda earlier demonstrated that operational-level command and

control structures were not in place for effective CAS at the beginning of OEF. This changed

quickly and was a significant focus of effort prior to OIF. Air Force senior-leader comments

indicated that the service realized it was not convincing in its provision of CAS, often because an

Airman was not visible to a corresponding joint force ground commander. Then-Lieutenant

General Ronald Keys commented, "We need to refine the air component coordination element

concept, which is air power's representation at the table in the land forces headquarters and

command posts."[852] Keys' comments also made reference to a "General Custer-type of scenario"

wherein a land force overextends itself and gets "wiped out" by a hostile force.[853] While

demonstrating that Army complaints about the CAS provided in Operation Anaconda still galled

the Air Force, his remarks also indicated that means to address the concerns it raised were

underway. The overall sentiment led the Air Force to establish in-country air command-and-

control elements in both Iraq and Afghanistan to ameliorate that shortfall.

In both Afghanistan and Iraq, command and reporting centers (CRC) and deployment of

the Airborne Warning and Control System (AWACS) aircraft facilitated a link between the

tactical-level air-ground systems and the CAOC. The theater-wide focus on air support to ground

forces was unmistakable, as was an overall eagerness among senior leaders to hone joint

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[851] Gates, *Duty: Memoirs of a Secretary at War*, 131.
[852] Ronald Keys (Lt Gen, USAF; Deputy Chief of Staff for Air and Space Operations (A-3), U.S. Air Force), remarks at Shephard's Air Power Conference 2004, January 2004.
[853] Ibid.

operations in MCO. According to an expert who witnessed the relationships first-hand, "When we went into Iraq for major combat operations, Moseley, Keating, and McKiernan [the air, maritime, and land component commanders, respectively] were like a band of brothers. All the relationships were there for MCO. Where it got difficult was when MCO ended."[854] The reluctant transition to COIN warfare in Iraq witnessed an end to warm inter-service relationships, which gave way to an extended period of parochial inter-service doctrine debates.

Few areas exhibited the on-again, off-again nature of air-ground jointness more clearly in OEF and OIF than in the Air Force's Air Component Coordination Element (ACCE) construct. According to Lieutenant General William Rew, General Moseley conceived the ACCE construct during the ten months he worked on the battle plan for OIF. "He wanted to keep the land-component relationship close, modeled after the one he enjoyed with Lieutenant General McKiernan."[855] The ACCE concept placed a flag-officer Airman with each service component in both the Afghan and Iraqi areas of operations (AOs). It was similar to the relationship developed between Lieutenant General Omar Bradley and Major General Pete Quesada in WWII, who, as the respective commanders of First Army and Ninth Tactical Air Command, remained in the same place at all times, a hedgerow alone separating their sleeping quarters to mitigate the risk that a single attack would kill both commanders.[856] If the formal arrangement survived Moseley's tenure, the spirit of its implementation did not. By 2007, an Air Force observer sent to monitor command-and-control arrangements in Iraq and Afghanistan perceived "visceral hatred" of the air component by the ground component, and attributed most of the animosity to deliberate

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[854] William J. Rew (Lieutenant General (ret.), USAF; former Vice Commander (2009-2013), Air Combat Command; Director of Operations (2003-2004), 9th Air Force and U.S. Central Command Air Forces), telephonic interview with the author, 7 January 2014.
[855] Ibid.
[856] Thomas A. Hughes, *Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II* (New York: The Free Press, 1995), 156.

measures taken by the CFACC to assert the independent, centralized control of the air arm within a theater of operations that included two very significant COIN operations being run by two different four-star commanders.[857]

Liaison Billets and Organizational Alignment
Whereas the ACCE concept—at least during times when it worked well—sealed a glaring gap at the operational level of warfare, demand for low-level tactical air-ground liaison seems to have been adequately met, even at the outset of OEF. Even so, tactical-level capacity begged expansion in the opening years. By early 2004, the idea that all services should be able to control CAS provided by air assets of any service or a participating coalition member had significant inertia, both within the U.S. military and the NATO alliance, and was reflected in appropriate training systems.[858] The missing piece was a reliable organization to coordinate among controllers at the level of maneuver units. One of the shortcomings evidenced in all CAS efforts from WWII to the present is an initial lack of personnel adequately qualified to control air assets integrated with the ground units they support, but in Afghanistan this came in a slightly different form of difficulty than it had in the past.

Though a dearth of adequate control plagued the early years of Afghan and Iraqi CAS, the remedy of simply producing more qualified terminal air controllers and situating them with the ground units they supported was not adequate. The issue in Afghanistan, and so apparent in Operation Anaconda, was the lack of an adequate mechanism one level up from individual maneuver units. The Air Force, in changing its alignment of Air Support Operations Centers from correlation with the six legacy corps of Army Cold War, instead aligning with its active

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[857] Rew interview #1, 7 January 2014.
[858] Pengelley, "In CAS of Emergency."

fighting divisions, was working toward a solution.[859] This demonstrated genuine commitment to improving CAS, as manpower directed to this mission represents a loss of other capabilities in the zero-sum world of post-conflict military drawdown.[860] The remaining step was to field the appropriate command-and-control structures, such as the ASOC left behind by the 10th Mountain Division, and allow them to act as a liaison between the CAOC and maneuver units for the provision of COIN air power. This is a notable shortcoming of the era—Monte Cannon derided it as "pasting over seams with still more liaisons"—and remains an issue the U.S. military has never brought to an appreciable point of closure.[861, 862]

Naval Integration
Throughout both OEF and OIF, the Navy played a significant role in CAS and ISR missions. Adapting the role played by carrier aviation in the early interdiction campaign, naval aviators matured in the joint CAS arena to a level of precision and flexibility ground troops have come to expect from Air Force and Marine CAS providers.[863] As in the Balkan campaigns of the 1990s, integration of naval aircraft into the ATO was at first vexing for both planners and the naval aircrew supporting those missions. Frustrations with the Air Force's system that arose in Operation Desert Storm and the Balkans still plagued efforts to integrate the Navy into an air war

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[859] See, e.g., Curtis V. Neal, Robert B. Green, and Troy Caraway, "Bridging the Gap from Coordination to Integration," *Joint Forces Quarterly*, no. 67 (2012).

[860] Air-ground coordination planners for the Air Force at the Pentagon are attempting to leave a standing force structure in place in the Reserve component, a bid to ensure that the expertise gained over a decade by the active duty force does not exit *en masse*. Time will tell if these efforts are successful in the turbulent contemporary fiscal environment; James Jinnette (Colonel (ret.), USAF; former Combat Air Forces Division Chief (2011-2014), HQ USAF/A3O-AC), personal interview with the author, 7 January 2014.

[861] Cannon, "Cleaning Up the Joint," 277.

[862] As described in Chapter 3 and Appendix A, the lack of a suitable air-ground command-and-control structure *one level up from the primary Army maneuver unit* was a recurring problem during the historical development of CAS and the same one identified during by General Robert Dixon to General William DePuy during the development of AirLand Battle when he wrote, "We have not come to grips with the interface for coordination of air support in a multiple corps scenario…The Echelons Above Division concept has caused us problems by removing the critical connection between the Air Force Tactical Air Control Center and a field Army." In OEF and OIF, the names and hierarchical position of the units were different, but the command-and-control disconnect was analogous; see Letter to General William E. DePuy; K168.03-2342 Pt 3; IRIS No. 1137059; Air Force Historical Research Agency, Maxwell AFB AL.

[863] Benjamin S. Lambeth, *Combat Pair: The Evolution of Air Force-Navy Integration in Strike Warfare* RAND Project Air Force (Santa Monica: RAND Corporation, 2007), 45.

over land. Though difficulties remained in using a centralized command-and-control system headquartered in a CAOC, the efforts to coordinate made in the Balkans continued to translate into better relationships in Afghanistan and later Iraq.

Naval aviators reported that integration of carrier-based air power since 2001 has improved steadily. One noted that "CAOC planners had a better appreciation" of the carrier deck cycle and "carriers came to understand that they could not operate in a completely rigid manner."[864] Inability of the carrier battle group to receive and interpret the ATO—a common problem in Desert Storm—seems to have been resolved during the 1990s. The Navy increased its use of ground liaison officers (GLOs) over the decade beginning in 2001; these Army personnel provided insight about planned air support requests. Rather than simply have them fly to an assigned area and wait for a tasking, CAOC planners made deliberate use of naval assets whenever intelligence allowed.

Maritime component air capabilities relevant to CAS amplified many of the issues described thus far for the Air Force. Difficulties with communication equipment and designated frequencies to talk to ground controllers were common in 2001-2002. Yet by the middle of the decade, naval aviation communications equipment—to include secure and frequency-hopping jam-resistant radios—operated in the air-ground command-and-control system with routine ease. The Navy and Marines added additional radio capabilities to all CAS platforms, including Link-16 terminals that allowed for shared positional awareness via airborne data-link. One-way

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[864] Commander Maloney elaborated that CAOC planners developed an appreciation that the most effective way to "extend" (hold past scheduled mission times using aerial refueling) naval platforms was in integer multiples of a carrier deck cycle. If an aircraft or section of two aircraft remained in place for an extra 20 minutes after their planned return time to support a troops-in-contact (TIC) situation or other urgent need, the CAOC learned to plan to have that aircraft for another 90 minutes, for example, or whatever the planned deck cycle timing was. It was not helpful to send the aircraft back to the carrier at arbitrary fractions of the deck cycle since it could not recover. For the carrier, leaving a few more aircraft on the hanger deck allowed out-of-cycle recoveries. The cost was "spares," or aircraft that could launch quickly if a primary platform could not fly for maintenance reasons. Navy air bosses learned to find trade-offs between overall launch capacity and flexibility to recover with the timing CAS missions demanded; Maloney interview, 12 December 2013.

video data-links were added to all CAS targeting pods by 2007, and by the end of the conflict,

two-way datalink systems gave aircrew and ground controllers the ability to see and

communicate with each other exactly what they could see on the ground and indicate how best to

target hostiles and identify friendly forces.[865]

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[865] Ibid.

Summary of COIN Air Support Advances

Area	*Tangible Improvements*	*Enabling (Inhibiting) Actions*
Equipment	- USAF medium-altitude UAV capability increased 20-fold[866, 867] - 42 MC-12 *Liberty* aircraft - Advanced targeting pods (ATPs), ATP integration on bombers, Rover video terminals, and data-link systems[868] - Laser designators, range finders, GPS-enabled weapons, hybrid laser-GPS weapons, low-yield (collateral damage-limiting) CAS weapons, and UAV-specialized glide bombs - JTAC position/visualization tools, TACP-compatible radios	- Industrial development - Congressional markups and lobbying for increased UAV systems - SECDEF interest and focus on deploying additional systems (2007-2009) - DoD ISR task force - Additional UAV squadrons added - Intel support grew to match CAP capacity - JUON & other urgent needs processes - Inter-service acquisition provided evidence of joint need[869]
Training	- CAS role for all fixed-wing multi-role fighters - AF training for UAV operators - GREEN FLAG, RED FLAG revamp, NTC, & JRTC training - CAS prominent in tactics manuals, moving target procedures - JTAC integration routine to company level - AGOS at Nellis AFB evolves to become 57th Operations Group	- 561st CTS established; "lessons learned" widely pursued - Pilot production surge/WIC shutdown - Air Force unit training aligned w/ accompanying Army units; concentration on COIN missions over MCO - Development of dedicated, non-aviator ALO/JTAC career field - Increased JTAC/FO manning and increased GLO manning
Organization	**Endogenous** - Matching JTACs to ground units, growth of operational control	- AF PA organs broadcast "all in" ethos - Expeditionary culture normalized ('ILO' became 'JET')
	Meso-Organizational - ACCE/JACCE - Naval asset integration - JAGOC	- Institutional history of dialogue (e.g., Army-Air Force Warfighter Talks) - "No more Anacondas" - Theater air commanders not empowered - Lack of operational control mechanisms
	Exogenous	- Air Force senior leadership scrutiny/ "decapitation" - Inconsistent strategic guidance (OIF)

Table 5.1. COIN Air Power Improvements in OEF and OIF

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[866] *Predator* is designated the MQ-1 or RQ-1; *Reaper* is the MQ-9. At this writing, there are 62 full-time *Predator/Reaper* CAPs, with approximately 700 *Predator* and *Reaper* aircraft in the inventory.

[867] Forty-two MQ-4 *Global Hawk* systems exist, most operated by the Air Force, but the mission they perform is not comparable to the tactical UAVs on this chart.

[868] These include Link-16 as implemented by JTIDS and the family of related systems represented by Blue Force Tracker, EPLRS, FBCB2. Inter-network integration is possible via AWACS and JSTARS.

[869] During the period of interest, the Army acquired approximately 7,000 organic UAVs, including 152 *Warrior/Gray Eagle* aircraft (a *Predator* equivalent), approximately 550 *Shadow/Hunter* aircraft, and more than 6,000 *Raven, Puma, Wasp* (hand-launched "micro" UAVs).

5. Summary of COIN Air Power Advances

Table 5.1 summarizes the COIN air power advances realized in the Afghan and Iraqi combat theaters after 2001. It reveals at a glance the following three trends discussed above:

1) Materiel and technological advances were numerous, developed rapidly, and exhibited steady improvement throughout the era of conflict.

2) Training programs emerged to provide manning commensurate with huge growth in the number of UAV systems; within platforms that already existed, new emphasis on CAS-enabling technology and procedures improved proficiency throughout all services.

3) The Army and the Air Force developed a system for linking close support operations to the centralized air-control scheme used for MCO developed after Operation Anaconda. However, command-and-control organizations for COIN air power units realized the slowest advances and witnessed notable failures and regression. Relationships among senior officers seemed to be often at odds with the technological, training, and coordination advances being made at lower levels.

Table 5.1 also lists some factors that enabled or hindered joint cooperation. Having discussed some aspects of COIN air power improvement in the post-9/11 conflicts, the chapter's final section moves to a theory-informed summary of inter-service relations during the era in which improvements occurred.

III. Explanations of Jointness

As in previous case-study chapters, this section hearkens back to the questions raised in Chapter 2, identifying patterns of jointness in view in the historical narrative. To tie the historical process-tracing narrative back to the foundational theories, a summary of the relevant theoretical observations—Table 5.2 on page 336—follows the textual descriptions. This section abridges many of the explicit theoretical explanations to limit the volume of discussion. Interested readers may consult Appendix A for an expanded, lens-by-lens discussion—one that follows the presentational format of Chapter 3—for an amplified theoretical treatment of this case study (general theories begin at page 456; military-specific applications begin at page 470).

A. General Theories of Organizational Interaction
1. Fighting can help foster cooperation
Though the cooperation and the combined-arms efficacy it brought about in this case study is among the weakest of the entire investigation, it is nevertheless remarkable in the context in which it occurred. The extensive technological and limited command-and-control advances occurred in areas in which the Army and Air Force find it most difficult to cooperate: limited-scope war and direct air support to ground units. Historically neglected in peacetime and marked by steep learning curves during periods of conflict, the contemporary example exhibited the same trends. Where cooperation occurred, it was facilitated by conflict, both actual battlefield combat that revealed weaknesses in combined-arms effectiveness and the resultant inter-service conflict that forced leaders to address those neglected specialties.

Several social science theories combine to complement one another and offer plausible explanations for this behavior pattern. The most obvious comes from **organization theory**: war is a first-order threat to the literal survival of military members, who must respond with improved tactics to increase survivability. As noted in Chapter 4, **crisis-cooperation theory** also offers an explanation of the role that fighting can have in cooperative relationships. In this case, the threat was marked by uncertainty, a result of both the unpredictability of the enemy and the uncertain aims articulated by national authorities. The Army and Air Force responded to the threat of appearing ill-prepared in the wake of Operation Anaconda by tackling the ongoing problems of OEF air support and the upcoming invasion of Iraq with several months of preparatory joint planning, a cooperative strategy predicted by the literature. The theory of **professions** also predicts a similar outcome, at least as it pertains to preparation for the next immediate battle, as neither service wanted to lose more credibility in its contributions to the newly emerging 'Global War on Terror.' In short, organizational autonomy and survival of

service interests—at least from a bureaucrat's perspective—felt at times as much under fire as did U.S. and Afghan soldiers on the ridgelines around the Shahikot Valley in early 2002, causing the services to band together for support against these outside threats, albeit temporarily.

Although cooperation emerged in response to these forces, it was fleeting. As combat operations reached steady-state rhythms in the wake of the Iraqi invasion and the transition to a COIN-intensive conflict in both countries of interest, stasis in the inter-service relationships again set in. After the exit of personalities who had utilized open fighting as a means to achieve the close cooperation of a "band of brothers," the services were lulled into a sense of *fait accompli* with respect to their combat responsibilities, but without appreciation of the friction that needed to be overcome the standing obstacles to efficacy.[870] Combining these structural issues with personalities who seemed dedicated to fighting for service-specific command-and-control ideals made the atmosphere ripe for a breakdown in helping behaviors—though outward relations may have remained cordial, a kind of seething civility masked the depth of dysfunction.[871]

2. Coalescing interests helped solidify cooperative gains
OEF and OIF provide examples of how inter-strata coalescence of objectives shaped both tactics and strategy. For example, in the major combat operations that marked the invasion of Iraq and overthrow of its Baghdad government in 2003, Cannon portrayed General Tommy Franks' alignment of service interests with those articulated to him by DoD and other exogenous actors as an effective—however reluctant—means of getting the services to support the all-important invasion timetable.[872] By offering the Army and Marines their own substantial, independent routes of attack to Baghdad; by allowing the Air Force its 'shock-and-awe' air campaign once

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[870] The characterization of senior component leaders' relationships comes from Rew interview #1, 7 January 2014.
[871] For a discussion of friction between air- and surface-component military leaders from 2006 to 2009 and the subsequent amelioration that a set of different personalities brought, see Appendix A.
[872] "The deployment timeline drove the planning effort;" Cannon, "Cleaning Up the Joint," 271.

hostilities kicked off; by adequately incorporating the Navy's available special operations and carrier assets into the attack; and by implicitly threatening punishment for wayward actors ("The childish behavior we saw in Afghanistan will not be repeated"), Franks limited the divergent interests that the risk-averse services might have used to threaten his tightly knit plan, which hewed closely to the desires of Secretary Rumsfeld.[873]

In the realm of COIN air power, subgroups within the services coalesced to accelerate the growth of UAV-ISR capability. The emergent UAV community, which had been treated like a "leper colony" in an Air Force culture dominated by manned platforms, saw its legitimacy solidified by huge increase in demand for the capabilities it provided for special operations and conventional ground forces.[874] These in turn captured the attention of Secretary Gates, who then pushed the Air Force to increase its capacity for MQ-1s and MQ-9s more quickly than the service's own bureaucratic processes would have allowed.[875] Viewed from the perspective of **organization theory**, the development shows the importance of coalition-building behavior in bureaucratic politics.[876] It also brings to mind the means by which subgroups held in low esteem by their parent organizations facilitate effective cooperation in collective efforts.

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[873] Ibid., 264-70. Franks' quote is from Michael R. Gordon and Bernard E. Trainor, *Cobra II: The Inside Story of the Invasion and Occupation of Iraq* (New York: Pantheon Books, 2006), 93.

[874] The characterization of the UAV community came from Air Force Chief of Staff General Norton Schwartz; see Anna Mulrine, "UAV Pilots," *Air Force Magazine*, January 2009, online resource. http://www.airforcemag.com/MagazineArchive/Pages/2009/January%202009/0109UAV.aspx.

[875] General Deptula highlighted some of the agency problems that inhered in expanding the number of Air Force UAV orbits and the assistance DoD provided him in reducing slack when he was director of Air Force ISR: "ACC did not advance our case. I would go to them in 2007 and say, 'What capacity do we have for additional UAVs?' There were seven [orbits] and they said, 'We can do eight and then we can do nine.' I would go back and talk to OSD; they would look at the resources we had available and say, 'No, you can do ten, twelve, fourteen...' There was always a constant struggle with ACC, not because they couldn't do more, but because they didn't want to. I'm not saying they were *devious*, but they didn't want to push the edge of the envelope, which is what OSD was directing at the time. It was embarrassing for me to believe what ACC told me, then to hear from OSD analysts that based on the training capacity, equipment, etc. that, 'You can do this;'" Deptula interview, 5 December 2013. (Emphasis added.)

[876] See, e.g., the discussion in Allison and Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 255-58.

B. Military-Specific Theories
1. A fundamental clash of service preferences inhibited joint cooperation
For all the cooperation that waxed and waned throughout OEF and OIF, it is impossible to shake

an overall sense that the services were being forced to cooperate in ways which they would not

have chosen absent outside pressure. While arrogance and 'chest-thumping' did not further

goodwill or cooperation, they are a part of steady-state inter-service existence and should not

absorb an inordinate share of responsibility for breakdowns. Analysis of the structure of the

components of a joint force, along with the cultural preferences of the services who supply the

bulk of each component, suggest a more compelling reason for the enduring dissociative forces

that plague joint cooperation. Air support to COIN warfare puts the Army and Air Force's

distinct ideals of command-and-control structures in competition with each other, and in a way

that continually brings them into sharp relief. The Army is especially committed in its official

COIN doctrine to pushing autonomy out to its lowest-echelon commanders, who have the best

picture of the 'local' conditions that make or break effective engagement of a population. This

desire to devolve initiative to the fringes of the military organization comes into direct conflict

with the Air Force ideal of centralized control and apportionment to meet priority-mission

assignments with scarce, theater-level resources.

David Johnson's argument that COIN warfare requires decentralized command and control

of air power complement's Rew's ideas for improving operational coordination; both realized its

reliance on smaller, peripheral units to carry out the overall strategy.[877, 878] These ideas contrast

with Jeffrey Vandenbussche's prescription for balancing the centralization and decentralization

of Air Force operations, which squares better with long-held Air Force institutional preferences.

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[877] Johnson, *Learning Large Lessons*, xxiv.
[878] Rew's Air War College presentation specifically mentioned the need for mission-type orders in MCO, with a shifting emphasis on "distributed air planning" to support ASOCs and TACPs as conflict transitioned to COIN and stability operations; William J. Rew, "Operational Flexibility," (Maxwell AFB: slide show presentation to the Air War College, 2010), slide 8.

He posited that political sensitivity toward a given conflict was inversely related to its relative intensity. High-intensity, existential conflicts merit decentralized, 'mission-type' orders, whereas limited-scope conflicts like COIN call for centralized control to prevent the commission of serious errors that might thwart political aims, as they rely heavily on not angering a civilian population.[879] The resulting command-and-control paradox is that the Army and Marines try to push initiative and control toward lower echelons in COIN, while the Air Force takes the opposite tack. Appendix A has a more detailed description of this particular inter-service conflict (see pages 479-482); it suffices to conclude here that these service preferences constitute an ongoing obstacle to closer joint cooperation in any conflict, but especially one characterized by COIN warfare and small-unit tactics that rely on air power for fire support.

2. Inconsistent exogenous guidance inhibited joint cooperation
The first two case studies have found that exogenous influence can have a positive influence on joint cooperation. Here, the finding is that inconsistent and lacking exogenous guidance did little to further joint cooperation, and may have encouraged the services to pursue more competitive and confrontational behaviors during some periods of OEF and OIF. The first example came from DoD, where a sharp difference in the approach of two consecutive Secretaries of Defense sent confusing messages to the services. In the case of Donald Rumsfeld, an insistence on a 'small-footprint' military force deployed quickly to OIF was in line with Air Force ideas about the strategic effect air power can have, but clashed with the land services' ideas about the size of the force needed to stabilize such a large country after its government was removed. The other notable contrast between the two secretaries was on their focus toward day-to-day operations in the conflict. Whereas one service chief complained that Rumsfeld focused on the futuristic 'transformation' of the defense establishment at the expense of placing sufficient attention on the

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[879] Vandenbussche, "Centering the Ball," 68.

ongoing wars in Afghanistan and Iraq, a successor—who paid for his opinion with his job—felt

that Gates micromanaged the conflicts and sacrificed long-term defense planning at their

expense.[880] Objective control of the military was undisputed, but the animosity and distrust it

engendered between layers of the defense establishment may have placed additional barriers to

future cooperation.

While DoD guidance was inconsistent, it was at least extant and somewhat forceful. Less

guidance from other exogenous sections of the defense establishment was forthcoming,

especially from Congress, who in typical form stood clear of questions about military

performance until well after conflicts had ended or appeared to be drawing to a close. Congress

did enable large amounts of additional military spending during the peak years of OEF and OIF,

though, which solidified some of the technological-materiel gains already mentioned, but also

created opportunities to misappropriate so-called 'joint' wartime acquisition processes with

service-specific preferences. Even if they did advance battlefield cooperation, auditing agencies

noted that these acquisition efforts proceeded without substantial oversight or coordination.

One exception to an otherwise general dearth of consistent exogenous guidance to the

services was increasing executive reliance on the options afforded by UAV platforms, both for

surveillance and strike options. This preference was reflected in DoD direction to the Air Force,

but stands as a force in its own right. However, the exogenous guidance that proved so effective

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[880] General Jumper expressed frustration with Rumsfeld's apparent lack of immediate concern for OEF and OIF while closely managing plans for future military development: "You had OSD trying to work things in a very normal, peacetime way while the services were trying to keep the war effort going. It was difficult to sit through long—very long—sessions about what was 'transformational' and what was not, discussing systems that I knew were decades off;" Jumper interview, 16 December 2013. As the Air Force Chief of Staff, General Moseley bristled under Gates' tenure and his detailed concern with day-to-day warfighting. In addition to the attention he gave Air Force UAV programs, he pushed to get mine- and IED-resistant military vehicles rushed into use after many years of service foot-dragging. In sharp contrast with Jumper's view of Rumsfeld's gaze into long time horizons, Moseley criticized Gates for having "this-war-itis." He remarked that, "I think you have to be able to walk and chew gum at the same time. You have to do both: fight today's fight and prepare for the future…it's not either-or;" John A. Tirpak, "Gates Versus the Air Force," *Air Force Magazine*, March 2014, 54. http://www.airforcemag.com/Features/Pages/2014/box020514gates.aspx.

in the two previous case studies was generally absent in this instance, and the quality and consistency of joint cooperation seems to have suffered as a result.

3. Ideas about military innovation
The last major theoretical observation from this case study involves the mechanisms of military innovation as they relate to joint cooperation. The motivation of Air Force and Army personnel who recognized a need for improved coordination mechanisms led them to document shortcomings, propose remedies, build consensus across bureaucratic strata, and ultimately stabilize the use of new systems within theaters of operation. Greg Harbin's experience in advocating and propagating use of the Rover video repeaters is an archetype of this kind of innovation, and it echoes the constructivism and activities of the heterogeneous engineers documented in the JPATS case study. Again, someone willing to put in energy and effort that went beyond the normal churn of bureaucratic affairs made possible a cooperative system enabled by technology.

None of the competing theories of military innovation emerge with clear explanatory power in the OEF-OIF COIN air power saga. Inter-service competition *à la* Coté probably helped spur the Air Force to develop more and better UAV technology, as the service watched the Army's relentless deployment of its own systems intrude on its turf. As discussed earlier, though, plenty of exogenous interference augmented this possible motivation. A stable career path for UAV operators also emerged during the period of conflict. Along with the earlier subgroup coalescence mentioned, this stabilization of a new professional group—associated with *peacetime* innovation in Rosen's formulation—both provides another explanation for the normalization of an important air-support technology as well as it highlights the difficulty of characterizing these periods of conflict as 'war' or something that fell short of it—at least as far as bureaucratic actors were concerned. To round out the coterie of military-innovation theorists,

a nod must go to Posen, whose *leitmotif* of military failure driving innovation may help explain the fits and spurts of command-and-control and technology advances that occurred after the prelude of Operation Anaconda.

In summary, while a great deal of general and military-specific theories provide plausible explanations as to why certain cooperative behaviors emerged, the one thing that seems lacking—and that seems to point to why cooperation was so sporadic over more than a decade of conflict—was the explicit exogenous influence that helped multi-strata interests to coalesce into stable cooperation. Absent that forcing function, the external threat of war and the efforts of individual leaders shone through at times, but were never enough to overcome the dissociative forces that service preferences have historically erected as obstacles to joint cooperation where air support in limited war is a concern.

COIN Air Power Observations

Theory	Observed Outcomes for Jointness
Public goods	- No deliberate free riding by any service at the tactical level; small-group dynamics and threat of failure overcome bureaucracy in crises - Interpretations of ambiguous strategy varied by service; operational jointness pursued in good faith, but other factors intervened - Social pressure a factor for joint participation (non-air power specialties)
Organizations	- Mission needs (threat responses) drove systems development; bureaucratic politics likely inhibited organizational flexibility; service-level political maneuvering had occasional impact on wartime decisions - UAV status changed within AF: coalesced w/national needs and DoD emphasis - The need for COIN air power resources (UAV ISR) spurred AF career field growth; unmet Army demand created areas of additional conflict
Crisis cooperation	- Crises influenced behaviors/strategies, greatest effect at tactical/operational levels - Enduring perception of urgency drove tactical decisions throughout conflict; operational and strategic effects are less pronounced - Nature of crisis perceived differently at different organizational levels; perceptions at higher strata changed over time under different leaders - "Unclear/short-term" became "unclear/long-term" crisis; open fighting reduced & cooperation observed, but senior leader interactions mixed
Professions	- Dramatic pull for COIN air power resources built capacity across all services, and to a level exceeding traditional Air Force strategic preference - Interdependence encourages cooperation, then drives organizations to seek overlapping capabilities—made cooperation more difficult - Both CAS and UAV ISR sub-communities' contribution to long-term efforts enhanced their standing in own services and increased integration
Agency	- Services slow to react to changing exogenous goals and guidance, leading to the perception of implementation slack; appeared uncooperative
Military Innovation	- Most wartime innovation resulted from intra-service initiatives; individuals (and leadership) played significant role in advancing technologies - Crises encourage technological and training innovation; command and control remained a mixed bag based on perceived urgency
Civil-Military relations	- Gates' removal of Air Force leadership in 2008 increased UAV ISR growth, but embittered observers within the service - Direct civilian intervention may chill service advice to DoD
Service cultures	- Air Force strategic culture likely inhibited embrace of COIN concepts when nature of conflicts shifted - Army strategic culture likely inhibited consideration of air power for first conventional battle of conflict (Anaconda) - Service culture cuts both ways; parochialism inhibited jointness; careful exploitation of service and sub-group cultures promoted capabilities
Defense Department & Joint Staff	- Joint structures provided coordination of joint tactics; operational doctrine less influential, fails to overcome service doctrinal preferences - JUONs provide rapid acquisition capability in war; effect on jointness is mixed, and potential for non-joint opportunism exists - OSD priorities can influence select programs; extreme adjustments more likely to demoralize than adjust service strategic preferences
Defense acquisitions process	- Cumbersome (conventional) or compartmentalized (urgent) acquisitions processes lead to slow innovation or divergent development - Exogenous concern with defense lies almost exclusively with platform acquisition and has little impact on integration or command and control - Congress uses influence to force continued or expanded use of materiel that runs counter to service preference - Presidential preference for weapons options influences acquisition and fielding

Table 5.2. Summary of COIN Air Power Theoretical Observations

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IV. Conclusion

Analysis of COIN air power during the recent Afghan and Iraqi conflicts reveals a variety of mechanisms, informed by theory and descriptions of the defense establishment, which can encourage and discourage joint cooperation. Where leadership and coalescence of institutional interests remain important, the simple threat of war seems to offer additional mechanisms for creating combined arms success. Whether it is the desire to be a member of an effective team facing down a crisis, a passion to avoid failure, a grasp for professional credibility, or the incentive for innovation in the heat of battle, the pressures of war can serve to drive joint cooperation even as they remove some obstacles that might prevent it. The obvious shortcoming of relying on this approach alone is that the pressures dissipate in times of peace, and even during times of steady-state conflict. The months and years when the nation is not at war ostensibly constitute an opportunity for undistracted thinking that could more readily build long-term inter-service military capability. War is at any rate an expensive way to learn lessons, both in terms of materiel and human life; armed opponents always learn at a high price.

As revealed by several examples, individuals can do much to further jointness. In the story of COIN air power, people proved their mettle fighting on a battlefield, delivering new equipment to users in the heat of combat, insisting on the betterment of lackluster command-and-control systems, pushing a service to develop capability faster than it might have, and reaching out to mend damaged inter-service relationships. As in other case studies, these successful efforts spanned all levels of the defense hierarchy, as empowered agents acted in the role of heterogeneous engineers to build consensus and stabilize the 'answer' they devised long enough to make a significant contribution to efficacy. The urgency of battle and the greater budget latitude associate with war seems to have given greater leverage to individuals who wanted to advance joint capabilities. Where they might have labored in Pentagon obscurity during peace,

the pressures of war gave them a captive audience and a compelling narrative that garnered immediate attention and funding.

Overcoming bureaucratic inertia and the tendency to seek individual political gain proved to be among the biggest obstacles to jointness. Here the efforts of individuals prevailed at times as well. Where a single person could not overcome difficulties, coalitions of stakeholders striving to increase combat capability formed. Given a suitable amount of time in the crucible of combat, the goals they sought were often realized.

The theoretical examination of the causes of jointness reveals likely equifinality; there is more than one means to encourage, even force, joint cooperation. It also raises a few paradoxes. The unique traits and sources of pride resident in each military service cause it to strive for greater capability, an essential building block of jointness. Yet the institutional personalities that drive favorable ambition may cause resentment in other services, potentially negating joint benefit. When the ideal command-and-control mechanism to achieve battlefield effects seems evident from one perspective, the immutable political nature of war makes it ill advised from another. An individual, particularly a high-ranking or influential person, can provide the force and focus to achieve joint cooperation when it seems out of reach. Yet the same force of personality may serve to demoralize a force or intensify its bureaucratic resistance to cooperation, meaning the use of individual influence must be deliberate and measured. In the end, Margaret Hermann et al.'s conclusions about organizational leadership proved particularly prescient for organizations at war. People, particularly leaders, matter; and they matter at all levels of armed conflict, from tactical to strategic.[881]

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[881] The authors note that "goal-driven leaders—the crusaders, the ideologues, those who are directive, task-oriented, and transformational in focus—interpret the environment through a lens that is structured by their beliefs, attitudes, motives, and passions. They live by the maxim 'unto thine own self be true,' their sense of self being determined by the congruence between who they are and what they do… They act on the basis of a set of personal standards and

V. Epilogue: COIN Air Power After Afghanistan and Iraq

CAS subject-matter experts interviewed for this investigation generally agreed that Air Force CAS focus and capability peaked during a period between 2009 and 2011.[882] There were demonstrable improvements in the ability of all services to coordinate and execute CAS in the decade after Operation Anaconda. Low ground-troop concentrations with relatively little organic firepower, dispersed widely over a large geographic area, made the application of precision airborne fires critical to the success of the campaigns. So, air power presence—along with an ability to coordinate its effects among the services—has only grown since March of 2002. ISR capabilities, especially those provided with the persistence offered by UAVs, have also become a critical part of the fighting style employed by the U.S. and its allies in both Afghanistan and Iraq.

Yet there is evidence, even with the Afghan war still underway, that the service's patience with this COIN warfare mission is waning. "From a joint-service perspective, the ability of the United States to perform close air support is now the best the world has ever seen. We have spent more than a decade honing this capability to a fine science *at the expense of other core missions*, including OCA, DCA, interdiction and SEAD."[883] As the conflicts wind down, concern about those other neglected missions has emerged. The result is that attention on CAS seems to be fading, just as it has after all conflicts in which the Air Force has had to provide significant

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seek out leadership positions where their standards generally are reinforced," which is an apt description of the personalities of many who attain high rank in the military services. Since the military only fills its leadership positions internally, though, these personalities must exist at all levels at all times; see Hermann et al., "Who Leads Matters," 86-87.

[882] The impression comes from, *inter alia*, Bochain Interview, 24 January 2014; Dabros interview, 7 February 2014; Donnelly interview, 24 January 2014; Gersten interview, 22 October 2013; Jinnette interview, 7 January 2014; Maloney interview, 12 December 2013; Neuenswander interview, 7 January 2014; John T. Orchard (Lieutenant Colonel, USAF; Commander, 492d Fighter Squadron; RAF Lakenheath), telephonic interview with the author, 24 November 2013; Darryl L. Roberson (Major General, USAF; Commander, Third Air Force, U.S. Air Forces in Europe; former Vice Director for Operations (2012-2014), VDJ-3, the Joint Staff), personal interview with the author, 21 March 2014.

[883] Gersten interview, 22 October 2013. Emphasis added.

support to the Army.[884] Though the Air Force does not appear wont to end its practice of co-locating air support units with Army divisions, post-conflict drawdown of the Army necessarily means that CAS training, familiarity, and proficiency within both services will diminish.

In a similar vein, discussions at the 2013 Army-Air Force Warfighter Talks suggest that the demand for ISR capabilities within the services has reached a temporary maximum.[885] The 'complete' military withdrawal from Iraq in 2011 and the end of the military 'surge' started in Afghanistan in 2009 witnessed a reduction in ground forces and a commensurate decrease in demand for air missions that support COIN. General Mark Welsh, the Air Force Chief of Staff, has suggested in the press that the Air Force would like to reduce the number of UAV orbits it supports for operations in the CENTCOM geographic area.[886] A recent report from the Center for Strategic and International Studies warns that as the U.S. effort in Afghanistan draws down, "commitment within DoD to explore the broader possibilities of unmanned systems is retreating."[887] Most assuredly, the Air Force has returned to its desire to develop UAVs that can operate in airspace contested by advanced air defense threats, and the Navy looks to follow suit. Given the importance of UAV-enabled strike and ISR to national objectives that reach beyond the Afghan and Iraqi campaigns, there is little chance of these systems suffering complete

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[884] An Air Force officer and CAS expert, who wished to remain anonymous on this point, said of CAS equipment, "We're making the assumption that what we have now is what we'll have to play with for the next ten years. We're trying to make a last-minute investment while we're still somewhat sexy."

[885] According to an observer, the Army G2 offered an opinion that excess Army UAV feeds could be shared with the Air Force's strategic ISR planning at the CAOC when not used by ground commanders. The Army Chief of Staff immediately dismissed the proposal; Stephen Clark (Colonel, USAF (ret.); U.S. Air Force Strategy, Concepts and Wargaming Division), personal interviews with the author, 17 and 27 November 2013.

[886] Welsh called for approximately 45 orbits to support ongoing operations in and around Afghanistan. He has advocated drawing down from the 62 orbits maintained in November 2013 to provide resources for other areas of interest and to invest in the Air Forces' "ISR infrastructure," which includes Distributed Common Ground Stations that control UAVs and the analyst network that interprets collected data. See, e.g. Lee, "USAF Debates Reduction in UAV Orbits." At this writing, the CENTCOM AOR still receives a vast majority of allocated, air-breathing ISR capability within the Air Force; Eric C. Danielsen (Major, USAF; ISR Global Force Management Branch; JFCC-ISR, STRATCOM), personal interview with the author, 6 February 2014.

[887] Samuel J. Brannen. "Sustaining the U.S. Lead in Unmanned Systems: Military and Homeland Considerations through 2025." Washington DC: Center for Strategic and International Studies, 2014, 1.

neglect from the Air Force. Enduring close integration with ground forces is another matter, though.

Congress is unambiguous in its distrust of the Air Force on CAS and UAV ground support. The Senate report accompanying the 2015 NDAA, for example, is one of dozens of sources that calls into question the Air Force's claim that it needs to retire the A-10 to meet larger budgetary constraints.[888] Amidst a slew of limitations designed to slow or prevent the Air Force from retiring any type of airframes without a rigorous prior explanation to Congress, legislators also limited the retirement of the MQ-1 *Predator*.[889] Both measures, while they convey the overall displeasure of the legislative branch, are blunt cudgels: they focus on materiel procurement but do not address the command-and-control and theory-of-victory problems that lie at the heart of Army-Air Force difficulties observed during these last wars.

In contrast to Air Force trends away from CAS and medium-altitude UAV development, naval aviators interviewed for this research generally reported that capability to perform CAS missions from aircraft carriers continues to grow. Carrier-based aircraft continue to develop systems that lend themselves to CAS missions, including a helmet-mounted cueing system that allows for both day and night operations, improved aircrew-weapon interfaces for GPS-guided munitions, and an advanced targeting pod that can receive coordinates directly from a ground controller.[890] Training for CAS-specific missions such as strafing still occupies more than half of

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[888] U.S. Senate, Committee on Armed Services, *Report to Accompany S. 2410*, 113th Congress, 2d session, 2 June 2014, sec. 134, page 10.

[889] Ibid., sec. 131, page 9.

[890] Current joint (Air Force, Navy, Marines) helmet-mounted cueing systems are very valuable for quickly identifying targets and friendly forces using coordinates provided by ground and air controllers; see "Joint Publication 3-09.3: Close Air Support." The system provides the capability for a pilot to look in the vicinity of an object of interest and see overlaid symbology that identifies it as hostile or friendly. However, current systems are incompatible with helmet-mounted night-vision devices, which are critical for safety in nighttime aviation. As a result, most pilots forgo the use of the helmet-mounted cueing system when flying at night, which slows down the speed of target acquisition and friendly identification when flying nighttime CAS. Most current fielded advanced Air Force targeting pods still require someone in the aircraft to type coordinates in manually after a controller passes

a deploying aircrew member's training, resulting in neglect of training for major combat

operation missions such as interdiction or air superiority. Marine aviation, which has never

strayed far from CAS, remains fully committed to honing a rigorous menu of capability in the

mission, including aspects that the other aviation services have not practiced since Vietnam.[891] In

the area of UAVs, the Navy continues to advance new concepts for getting medium-altitude

UAVs to the battlefield, including a novel submarine-launched capability and a new ship-based

conventional UAV.[892] The Navy will likely always remain focused on strategic power projection

and fleet defense, however. This current COIN air power situation is probably a point of perigee

rather than a new equilibrium in service culture, though the recent paroxysm of violence in Iraq

and the Levant may spur renewed U.S. CAS and delay atrophy for a period of time.[893]

The prediction by General Creech about the nature of twenty-first century war that opened

this chapter was as inaccurate as Major General David Baker's comment to an industry group in

1956: "We can readily see that except for certain types of missions, the manned combat aircraft

will become technically obsolete in the future."[894] There is a helpful parallelism in missed

prophesies about the nature of war and the demise of unmanned aviation, though. The Air Force

(and the other military services) looked for peer competition in large-scale conflict and pursued

combat platforms (including UAVs) to operate independently in the contested environment that

type of conflict would likely bring. Instead, it found itself working closely with the Army and

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them, increasing the probability of misidentification or a slower targeting process. Information about F/A-18
capability from Maloney interview, 12 December 2013.

[891] The Marines continue to practice contested-airspace CAS procedures, the use of unguided free-fall bombs, and
complex low-altitude, surface-fire coordination maneuvers. Such skills are eschewed by the other services, who rely
on guided-weapon technology from medium altitude for most CAS; Harvey interview, 22 January 2014.

[892] Daniel Parry, "Navy Launches UAV from Submerged Submarine," U.S. Naval Research Laboratory, accessed 14
December 2013, http://www.nrl.navy.mil/media/news-releases/2013/navy-launches-uav-from-submerged-submarine.

[893] See, e.g., Michael R. Gordon and Helene Cooper, "U.S. Airstrikes Could Help in Reversing Insurgent Offensive,
Experts Say," *The New York Times*, 14 June 2014, A10.

[894] David H. Baker, "News and Comments," *Army, Navy, Air Force Register*, 3 November 1956. Quoted in Ehrhard,
"Unmanned Aerial Vehicles in the U.S. Armed Services," 403.

Marines in a COIN conflict of limited proportions; CAS and UAV development accelerated

during years of combat to accommodate the ground-force needs in that very permissive air

environment, albeit not fast enough to keep pace with the appetite of the ground force for on-

demand organic support.

The contrast of reality with expectations says as much about the difficulty of constructing

technological systems in anticipation of future combat requirements as it does about the Air

Force's perceived reluctance to develop CAS assets or UAVs. There is an argument to be made

that jointness is difficult to construct for the same reasons: the means to build it and forms it

must take differ with external circumstances. The Air Force would have rather avoided the

Afghan or Iraqi conflicts, especially in their incarnations as COIN-intensive attrition campaigns,

because of its dominant institutional culture.[895] However, finding itself enmeshed in such

conflicts, it developed combat systems to accommodate the requirements of the environment,

including enhanced CAS capabilities and a great leap in UAV-ISR capacity. In the description of

John Law, the systems developed were not socially constructed as a result of the cultural

preferences of the Air Force and Army. Rather, the systems developed and stabilized around the

conditions of the era as these conditions interacted *ad modum* with service preferences.[896]

While anticipatory development of technology is and always will be a difficult proposition,

it is also necessary to restate one of the fundamental arguments of this chapter: the Air Force is

loathe to spend money, time, and people on systems that allow (or 'force' depending on one's

perspective) the service to expend air power capability on missions that are organically

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[895] The Army may not have been as eager to engage a COIN campaign as evidenced by its delays in adopting COIN doctrine, but as Donnithorne argues, the Army sees itself as subservient to national will and the final settler of the nation's wars; Donnithorne, "Principled Agents," 192. Therefore, it is more likely to adopt a changed strategy and come to view it as part of its culture than the Air Force is to deviate from its strategic focus.

[896] Law contrasts *social constructivism*, which gives primacy to social preference in the stabilization [temporary equilibrium] of technological systems, to the *systems approach*, which argues that natural forces as well as social preferences interact in networks that ultimately determine the artifacts that represent technological stabilization; Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," 111-13.

apportioned to and executed at the will of ground commanders. The concept is anathema to the

service's organizing principles and its fundamental doctrines. This work differs with Benjamin

Cooling in his assertion that "wartime experience—World War II in particular" is the "proving

ground" for CAS doctrine.[897] CAS *doctrine* receives appreciable attention *only* during times of

active conflict. At other times, only Army complaints, attention from Congress, or Air Force

forays into acquiring new aircraft put *any* focus on the matter. Indeed, the story of COIN air

support in the post-9/11 conflicts shows that organizational structures and cooperation among

senior military leaders remain the aspects of jointness most inhibited by inter-service friction.

I.B. Holley's summary that "the processes and procedures by which success was achieved,

usually belatedly, in each war in which the United States had been engaged for more than two

generations, were largely forgotten by the armed forces by the time they again became actively

involved in fighting" is an apt description of CAS.[898] This chapter outlined, through historical

process tracing, some of the mechanisms through which cooperation occurred—in spite of all the

obstacles—between the Air Force, Army, and the maritime services on this thorny combined

arms effort. While concrete examples of cooperation exist, they are largely based on materiel and

technology and enabled by training; there is little evidence of enduring institutional changes or of

flexibility to organize in favor of COIN missions. The willingness of senior military leaders to

cooperate in furtherance of joint goals is spotty, though the failure of one could be overcome by

the efforts and outreach of a successor.

Even though by some measures the level of cooperation appears impressive when outlined

for an entire decade, significant shortcomings are evident. The Army remained unconvinced of

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[897] Benjamin Franklin Cooling, "Introduction," in *Case Studies in the Development of Close Air Support*, ed. Benjamin Franklin Cooling (Washington DC: U.S. Government Printing Office, 1990), 2.

[898] I.B. Holley, Jr., "A Retrospect on Close Air Support," in *Case Studies in the Development of Close Air Support*, ed. Benjamin Franklin Cooling (Washington, D.C.: Office of Air Force History, 1990), 535.

Air Force dedication to the CAS mission, as evidenced by vocal campaigning against the retirement of the A-10. Nor did it appear satisfied with the level of UAV-ISR support it received, demonstrated by the nearly 7,000 UAVs it acquired during the conflict. Finally, vitriolic exchanges among senior officers did not diminish as the conflict wore on, leading observers to worry about "scar tissue" should the services need to cooperate on a new mission before the current generation of senior generals leaves the service.[899] Jointness, just like new technology, is difficult to construct, especially when exogenous leadership is in short supply. If individual leaders see a necessity to build jointness, though, the materials and mechanisms seem always to be available, perhaps even more plentifully during a time of conflict. The uncertain variable is the existence of human will to make an effort.

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[899] Rew interview #1, 7 January 2014.

CHAPTER SIX

A PRE-THEORY OF MILITARY JOINTNESS

If we then ask what sort of mind is likeliest to display the qualities of military genius, experience and observation will both tell us that it is the inquiring rather than the creative mind, the comprehensive rather than the specialized approach, the calm rather than excitable head to which in war we would choose to entrust the fate of our brothers and children, and the safety and honor of our country.[900]

<div align="right">

Carl von Clausewitz
On War

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But what is chance? What is genius? The words chance and genius do not denote any really existing thing and therefore cannot be defined. Those words only denote a certain stage of understanding of phenomena. I do not know why a certain event occurs; I think that I cannot know it; so I do not try to know it and I talk about chance. I see a force producing effects beyond the scope of ordinary human agencies; I do not understand why this occurs and I talk of genius.[901]

<div align="right">

Lev Nikolayevich (Leo) Tolstoy
War and Peace

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I. Introduction and Background

As described in Chapter 2, William Martel's approach to defining a pre-theory of 'victory' is

particularly useful for the conundrums presented by 'jointness,' which, like the former, exhibits

both definitional ambiguity and political complexity.[902] This chapter follows his work to sketch

out a pre-theory for the latter. The chapter attempts the following tasks: 1) it outlines a four-

parameter delimitation of the organizing principles most useful for describing and understanding

the concept of joint cooperation; and 2) it derives, using observed components of and

impediments to jointness, a definition suitable for use in further study.[903] The first task is a first-

iteration explication of the trends that emerged from this study's small-*n* examination of joint

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[900] Clausewitz, *On War*, 112.

[901] Lev Nikolayevich ("Leo") Tolstoy, *War and Peace*, trans. David Widger, 2009 Project Gutenberg iBooks ed. (Moscow: The Russian Messenger, 1869), 2198-99.

[902] Martel used a multi-disciplinary approach to refine the definition of 'victory' and to provide a pre-theoretical framework for its further study; see Chapter 2, pages 10, 19, and 27.

[903] This chapter follows closely the structure of Chapter 4 of William Martel's work *Victory in War*, applying his work of defining and providing a pre-theory of military 'victory' to a parallel problem observed with military 'jointness;' Martel, *Victory in War: Foundations of Modern Military Policy*, 83-87, 89-93, and 94-103. Martel's structure was as follows: 1) a derived definition of 'victory;' 2) an argument for the utility of a pre-theory; and 3) an outline for a four-part set of parameters to describe 'victory.' This chapter swaps the first and third sections, because *contra* Martel, this work's pre-theoretical chapter followed presentation of the case-study evidence. This chapter also eliminates the justification for pursuing pre-theory, this work having made the case earlier in Chapter 2.

cooperation. Listing the observed trends helps to narrow down a wide range of academic

theories—all of which provided some insight into a complex phenomenon—to the most salient

dimensions available for assessing jointness. It brings the theories discussed in Chapter 2 into

better focus by summarizing how their elements appear multiple times in the historical case

studies. Following refinement, the parameters derived from the theories may prove useful in

predicting the success of a joint military venture. This part of the pre-theoretical quest involves

the identification of organizing variables that "describe in systematic terms the ways in which

military and political theorists and other thinkers on strategy and war have employed, directly or

indirectly, the idea" of jointness in their writings.[904] The second part steps through a derivation,

also informed by case-study observations, to propose a new working definition of the term

'jointness.'[905]

II. The Parameters of Jointness

This study identified four parameters that proved useful for characterizing, comparing, and

analyzing the cooperative examples it examined. It is helpful to envision these variables as

existing across four corresponding spectra; they are multivariate characteristics that can change

over time in a given example. Using four separate, time-dependent variables to describe any

phenomenon suggests a high degree of complexity, and this study finds that the structural,

political, and technical variables of jointness are indeed worthy of such characterization. It

agrees with Lina Svedin's observation that cooperation on a national security dilemma

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[904] See ibid., 94.
[905] Where Martel began his pre-theoretical work with a refined definition, this approach tackles the definition after it outlines the pre-theoretical parameters. The reason for swapping the order is the definitional ambiguity encountered in defense-establishment usage, which is itself a function of some of the observed theoretical variables. In short, one's perception of what 'jointness' is seems highly dependent on his or her place in the defense establishment. The success or failure of a joint initiative depends in part on a leader's ability to attach meaning that encompasses all of these definitions. Thus, for 'jointness,' definition *follows* understanding of how the term works in practice.

"demonstrates the complexity of organizational interactions in crises."[906] The dimensions described here attempt to gather up many interlinked elements that influence each other in a way akin to an improvisational jazz ensemble. While there is a discernible pattern and rhythm within the whole, the dominant player changes over time, and the theme with which the piece started may or may not be intact at the close.

A. The motivation for jointness

This study found that no joint cooperation began without some type of exogenous influence, whether it came in the form of world events (war or the threat thereof) or the highest strata of the defense establishment.[907] This is unsurprising, since on balance the general organizational theories applicable to military bureaucracies illustrate that joint cooperation would *never* happen on its own. Prevailing theories about collective goods, bureaucratic competition, professions, and the principal-agent dilemma all suggest that the trajectories of the self-sufficient bureaucracies comprising the military would never elect to play in unison without an outside conductor. Crisis-cooperation theory and its presumption of collective action is an exception, but its very title reveals the presence of an external influence—there is no 'crisis cooperation' without a crisis.[908] Despite the leanings of the case-study analyses toward viewpoints espoused by Barry Posen, the

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[906] Svedin also observed, "All the strategies contain some mix of cooperative, less cooperative, and competitive behaviors," which proved true in the case-study observations here as well; see Svedin, *Organizational Cooperation in Crises*, 126.

[907] The arbitrary 'endogenous,' 'meso-organizational,' and 'exogenous' levels of analysis used for the dissertation proved useful. The scope of influence at each level is qualitatively and quantitatively different. However, there is no reason to hew rigidly to these demarcations; there is room for distinction with levels. For example, while this study has treated DoD, the legislative branch, the executive branch, and the media as 'exogenous' members and influencers of the defense establishment, all three case studies suggest that Congress' influence is more extensive than its nominal peers in this category.

[908] The literature about organizations cooperating in crises can offer a picture of *whether* organizations are cooperating or not, and if so, to what degree they are, but it does not explain joint behavior. Indeed, crisis cooperation theory makes a fundamental assumption that cooperation in environments marked by threats and uncertainty is a good thing. Proponents of jointness, particularly for what they identify as its most useful manifestation—on the battlefield—would likely agree, but the case studies offered show that this is not always, or even often, the case. Theoretical studies of peacetime military cooperation, such as Coté's, argue that cooperation is anathema to achieving the most efficacious slate of military options, even if it leads to short-term efficiency; see Coté, "The Politics of Innovative Military Doctrine," 350-51.

pre-theoretical parameter proposed here nevertheless includes the possibility that meso-organizational or endogenous initiative could in some cases be the root cause of joint cooperation.[909] Allowing this end of the spectrum a possibility of existence transmutes Stephen Rosen's idea about the roots of doctrinal innovation to the realm of jointness.[910]

For AirLand Battle, a visible external influence was growing concern over the Soviet Union and its Warsaw Pact-undergirded military capability. In the case of the JPATS, the steely gaze of Congress on failed acquisitions programs—the T-46 in particular—provided the Air Force palpable motivation to take charge of its own training fleet. In the case of contemporary COIN air power, the urgency of war forced the services to consider both command-and-control and technical issues that they had been able to skirt as a matter of peacetime habit. For all three cases, some amount of fear was operative in either creating the external impetus (e.g., there was trepidation in U.S. national security circles writ large over a military defeat in Central Europe) or the cooperative military response (e.g., the Air Force worried about losing its post-T-46 trainer autonomy; the Army and Air Force both feared the wrath of Congress if they botched anymore air-ground coordination in OEF or OIF battles).

Characterizing the external motivation for jointness is both a qualitative and quantitative exercise. War is qualitatively different than a congressional hearing, despite the combative analogies that beleaguered flag officers might share after a particularly hostile session. Both war and domestic exogenous interests can vary in intensity, though, even within the same long-term chain of events. Visibly irate Senators in the mid-1980s drove the Air Force to seek cooperative

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[909] Barry Posen asserted, "[O]rganizations innovate when they fail…when they are pressured from without…[and] when they wish to expand." The pressure from without is a dominant theme in his conclusions: "Militaries oppose innovation, but we see some remarkable innovations… Civilians do affect military doctrine. Their intervention is often responsible for the level of innovation and integration achieved in a military doctrine;" see Posen, *The Sources of Military Doctrine*, 47 and 227.

[910] Rosen, *contra* Posen, stated, "Military organizations do not innovate in peacetime simply in response to defeat or to civilian intervention. Innovation in wartime is not a matter of seeing that existing methods do not work and then correcting them;" Rosen, *Winning the Next War*, 52.

arrangements with the Navy, though as the intensity of that displeasure died down and other concerns came to the forefront of debate, the fervor to demonstrate visible jointness also died down. Major combat operations in 2001 and 2002 seemed to focus joint cooperation with an intensity that steady-state COIN did not muster.

With regard to AirLand Battle, the quantitative and qualitative aspects are even more nuanced. As discussed, the Soviet threat was probably never all that accurately quantified, yet it captured the attention of the entire national security establishment, including the executive and legislative branches of the U.S. government. While neither the President nor Congress explicitly directed the creation of AirLand Battle or a concept like it, Army leaders found in the Soviet Union a problem of sufficient severity and magnitude that their proposed solution became an answer that carried the day for several years. The development also just happened to offer a means to redeem their service from the ignominy of Vietnam.

The case studies allow for some preliminary conclusions about the effectiveness and staying power of external influences. A perceived existential threat embodied in conventional Soviet military power provided Army and, later, Air Force officials with the potential energy to overcome normal anti-cooperative inertia. This crisis did not dictate a specific type of response, demonstrating the variable's high interactivity with capable, constructive leadership (described later in this chapter as the fourth parameter of joint cooperation.) The power of the existential threat to keep visible joint cooperation alive—it never really subsided until the Soviet Union fell and the Cold War ended—seems to have had remarkable longevity.[911]

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[911] When concern about the Warsaw Pact faded in the west, it did not present a challenge only to U.S. strategic thinking. In writing about its relationship with the Russian Federation, Zbigniew Brzezinski asserted that NATO had "to define for itself a historically and geopolitically relevant long-term strategic goal" or risk irrelevance; see Zbigniew Brzezinski, "An Agenda for NATO: Toward a Global Security Web," *Foreign Affairs* 88, no. 5 (2009): 10.

The motivation caused by Congress' anger in the JPATS example drove a specific

response: cooperation with respect to trainer aircraft. Here again, though, even when Congress

led with a specific suggestion to acquire the then-in-construction T-45, military leaders operated

creatively within the problem-set context to find a different solution—one more amenable to the

Air Force's preferences and closely enough aligned with Navy priorities to achieve sister-service

buy-in. Here, there is ambiguity about the duration of influence. On one hand, the outcome was a

purchase of common military equipment that will span more than two decades. On the other,

acquisition programs are by nature long-term sagas; once full-rate production begins, they almost

always reach their scheduled culmination, though Congress has remained steadfast in holding the

services to their purchase commitments nearly three decades after the first spark that began the

program. Perhaps a more reasonable quantifier of the duration of the joint commitment was the

inter-service training program it spawned, which lasted just over a decade. This is in itself

considerable longevity in the context of jointness. The case-study analysis determined that the

influence that drove the training cooperation—a DoD 'good idea' rather than explicit

congressional direction—was different than that leading to shared acquisition. It perhaps

explains some of the observed difference in the staying power of exogenous influences on non-

acquisition matters. Returning to the jazz analogy, Congress tends to be the virtuosic 'best player'

in matters of peacetime facilitation, but it tends to sit out the set when the tune is set to an

ongoing war.

Expert observers, including members of Congress themselves, have noted that the

legislative branch is out of balance with respect to appropriations, micro-managing acquisitions

but ignoring glaring omissions of national security strategy. Senator Sam Nunn decried Congress'

use of its purse strings to parochial ends while it failed to shape a collective national strategy:

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"Annual authorizations provide a strong lever to influence defense policy and provide broad oversight. Unfortunately, we have come to abuse that lever; as the old saying goes: 'We have found the enemy and it is us.'"[912] For those infrequent times when the legislature does get involved in the strategic or command-and-control aspects of national defense, it tends to be a shakeup of major proportions. The most recent, and arguably most influential, example in U.S. defense history is the passage of the Goldwater-Nichols Act, which James Locher viewed as "helping to transform and revitalize the American military profession."[913] There is little disagreement that the legislation resulted in profound changes, including the favorable outcome of populating Joint Staff billets with a better caliber of officers, but Sapolsky et al. rued its continuation of a relentless trend toward defense centralization. They believe the legislation and other changes like it have had a chilling effect on the competition among diverse military options, limiting the choices available to the President and other national security figures.[914] For this reason, perhaps it is best that Congress' forays into this aspect of defense policy are generational rather than ongoing.[915]

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[912] Sam Nunn, (99th Congress, 1st session) "Congressional Oversight of National Defense," *Congressional Record* 131, no. 125 (1985): 25350. Nunn continued, "The burden of the annual authorization and appropriation process has produced two specific problems. It has led to the trivialization of Congress' responsibilities for oversight and has led to excessive micromanagement… In the defense arena, Congress was to set priorities for programs, not to execute them. Congress' role as the board of directors is eroding; rather, Senators and Representatives and their staffs are acting more and more like national program managers…We have not had a serious debate about the important relationship between our national objectives, our military strategy, our capabilities, and the resources to support that strategy. We all know that there are serious gaps in these important links… These are precisely the questions that Congress is supposed to consider: Do we have a strategy that achieves our national goals and objectives? Do we have the resources to meet these commitments and support the strategy? What alternative approaches might we adopt for overcoming the strategy-forces mismatch? Those are the questions that Congress should focus on. Instead, we are preoccupied with trivia… Our preoccupation with trivia is preventing us from carrying out our basic responsibilities for broad oversight."

[913] Locher, *Victory on the Potomac: The Goldwater-Nichols Act Unifies the Pentagon*, 450.

[914] Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 53-55.

[915] Locher noted that major defense-reform legislation in the twentieth century came about only in 1903 (following the Spanish-American War) and again in 1947 through 1958 (a spate of four actions following World War II); with no further actions "for almost thirty years after 1958;" see Locher, *Victory on the Potomac: The Goldwater-Nichols Act Unifies the Pentagon*, 29.

As for the unique influence of war, its power is clearly in view in the response to Operation Anaconda and preparation for major combat operations in Iraq. Agreeing with Alexis de Tocqueville, this study "finds no ill of war," at least in its ability to provide the sense of urgency prerequisite for jointness.[916] Despite—perhaps because of—open inter-service fighting, no portion of that extended conflict witnessed a more concerted effort to cooperate, even on the topic of air-ground command-and-control structures, historically one of the thorniest inter-service problems during combat. While fear of losing—or, more precisely, appearing to perform poorly—in battles after Anaconda drove much of the response, there was also a visible return to dysfunctional form when the intensity of conflict dwindled to that of steady-state COIN. The middle years of OEF and OIF witnessed a return to inter-service squabbles based on operational preference and competing theories of victory. "Band-of-brothers" camaraderie yielded to fractious infighting, suggesting that the intensity and staying power of war to effect cooperation analogize best as a flash in the pan, not a pressure cooker.[917]
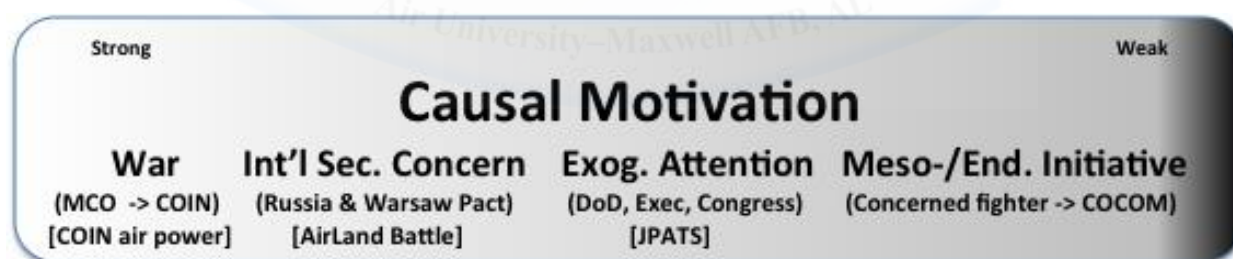

Figure 1. 'Causal Motivation' parameter of jointness

B. The potential for joint cooperation

The second parameter speaks to the type and potency of jointness available. Joint projects that fit into pre-existing structures are more likely to succeed in producing helpful cooperative outcomes. There may be a great deal of external influence available to spark movement against bureaucratic

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[916] De Tocqueville's context was the moral quality of a nation; he found that war sharpened it, that it "almost always enlarges the mind of a people, and raises their character;" see Alexis De Tocqueville, *Democracy in America*, trans. Henry Reeve, iBooks ed., 2 vols., vol. 2, (Digitally Published: Public Domain, 1840), Book 3, Chapter 22, paragraph 9.

[917] The characterization of inter-service cooperation is from Rew interview #1, 7 January 2014.

inertia, but if no visible joint solution to a given problem emerges, the opportunity may go unexploited. If a joint solution drives too much against the grain of one or more of the involved services' preferences, there may be some cooperation, but it might be stunted, uneven, or short-lived. Finally, if a joint solution is readily available that can absorb energy imparted by outside influences without upsetting too many parochial interests or trespassing on bureaucratic turf, the chances of a joint cooperative success may be high. This work observed that there are different levels of difficulty involved in facilitating jointness; they are in part dependent on the type of joint solution available.

The type of cooperation that presents itself is an important distinction. Although defense professionals have not reached unanimous agreement on what the essence of jointness really is (see Chapter 7), their opinions in the aggregate reveal that it has distinct materiel as well as organizational facets.[918] All three case studies in this investigation revealed aspects of both. In AirLand Battle, command-and-control compromises impacting doctrine and tactics (which are difficult to work out because the services are ideologically stingy) accompanied acquisition plans for weapons systems to make them possible (which are by comparison easier to program into a budget, especially an ample one). In the JPATS case, planning for the acquisition of an airplane and its associated support (a comparatively easy budgetary effort) preceded the organizational adjustment that facilitated joint training (a more difficult meeting of the minds about fundamental training and the pedagogy of flying). In Afghanistan and Iraq, the services addressed their visible shortcomings in the coordination of CAS and ISR with some organizational changes (recall Monte Cannon's description of "pasting over seams with still more liaisons…to engender battlefield integration"), but the bulk of the response was materiel in

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[918] A strong majority of a large sample of defense-establishment professionals, mostly military officers, reflected a belief that unified command-and-control structures were the essence of jointness, rejecting the idea that materiel factors like commonality were the primary goal; see Chapter 7.

nature: newer and better weapons, communication devices, and situational-awareness systems used brute technological capability to overcome the less-tractable institutional problems.[919]

The cooperative-potential facet of jointness interacts with the motivational causes described above. An observation that "Congress finds it extremely difficult to take responsibility for ongoing military operations" in part explains why its exogenous influence so often goes to materiel improvement rather than participating in the "unequal dialogue" that would ostensibly lead to improved command-and-control measures.[920] It is easy to hand-wave Congress' responsibility in this area and point to the executive's commander-in-chief prerogative, though simple electoral politics and the political liability of critiquing actively fighting forces probably drives closer to the heart of the matter. The threat of congressional inquiry does offer quite a bit of leverage over the military, but experience shows that it ultimately affects acquisition more than doctrine. When doctrinal topics are broached, though, the services listen carefully for the lead player's theme. Part of the reason the services paid so much attention to improving CAS procedures after Anaconda may have been their recall of the contentious hearings about air-ground coordination Congress conducted after each of the twentieth centuries' major conflicts.[921]

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[919] Cannon, "Cleaning Up the Joint," 277.

[920] The characterization of congressional involvement in war is from Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 131. The "unequal dialogue" is the give-and-take between military leaders and their civilian masters, "unequal, in that the final authority of the civilian leader [is] ambiguous and unquestioned." As Cohen coined it, the term refers to executive-military interaction—he did not specify legislative-military exchanges; see Eliot A. Cohen, *Supreme Command: Soldiers, Statesmen, and Leadership in Wartime* 2003 ed. (New York: Anchor Books, 2002), 209.

[921] It is not just Congress that focuses attention on CAS after (or during) a conflict. The Army and Air Force continually challenge each other on the topic. See, *inter alia*, *Hearing before the Special Subcommittee on Close Air Support*; U.S. Senate, Preparedness Investigating Subcommittee of the Committee on Armed Services, *Close Air Support: Report of the Special Subcommittee on Close Air Support*, 92nd Congress, 1st session, 1972; "CENTCOMM Commander Urges Close Air Support Examination."; Burgess. "Killing Your Own: The Problem of Friendly Fire During the Afghan Campaign," 2002; Edwin J. Den Beste and Gary M. Servold. "CAS Integration Lessons." Fort Leavenworth KS: Center for Army Lessons Learned, 1995; Dinges and Sinnreich, "Battlefield Interdiction."; Scott A. Hasken, "A Historical Look at Close Air Support" (Master's Thesis, U.S. Army Command and General Staff College, 2003); David Isby. "Written Statement on Close Air Support." Washington DC: USGPO, 1990; Kent and Ochmanek, *Defining the Role of Airpower in Joint Missions*; Lindsay and Ripley, "How Congress Influences Foreign and Defense Policy."

True to form, Congress has again been open in its inquiry about CAS as OEF and OIF come to a close, although the specific focus of the probe is mostly a debate about materiel—it centers on the efficacy of the A-10 and the Air Force's desire to retire what the Army sees as its "best" battlefield air support.[922]

This represents a squandered opportunity. Congress could maximize its leverage over command-and-control matters if, instead of waiting to critique in the aftermath of failure, it used its influence, power of the purse, and the leverage of inquiry to force joint action in those mission areas that the services have characteristically demonstrated unwillingness to practice—the difficult work of fighting together to perform missions that neither view as their most-favored skill sets.[923] Such an outcome relies heavily on the interplay of exogenous and endogenous leadership. More on this idea appears in Chapter 7 in the context of Air-Sea Battle's prospects.

The competitive roots of the Army-Air Force dispute are clearly available and beg adjudication by a higher authority. The Army, in its conception of mission orders, wants clearly delineated responsibilities among subordinate commanders who can pursue an overall commander's intent. At the same time, it seeks to attain increased standoff from the enemy force via improved intelligence systems and longer-range weapons systems. This push for ever-wider influence by lower-echelon commanders puts the Army in conflict with the Air Force, which perceives an infringement on its self-ascribed, theater-wide responsibilities that accrue to a high-

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[922] The characterization comes from the current Army Chief of Staff, General Raymond Odierno; see "Don't Save the Warthog," *The Economist*, 14 June 2014, 28.

[923] There is a great deal of material decrying the Air Force's perceived distaste for CAS. See, *inter alia*, Burgess. "Killing Your Own: The Problem of Friendly Fire During the Afghan Campaign," 2002; Cooling, "Introduction."; Den Beste and Servold. "CAS Integration Lessons," 1995; Rebecca Grant, "The Clash About CAS," *Air Force Magazine*, January 2003; Hasken, "A Historical Look at CAS."; Holley, "A Retrospect on Close Air Support."; Michael H. Johnson, "Cleared to Engage: Improving the Effectiveness of Joint Close Air Support," *Air & Space Power Journal* 22, no. 2 (2008); McElroy and Hollis, "Fire Support for Operation Anaconda."; Neuenswander, "JCAS in Operation Anaconda."; Steven G. Olive, "Abdicating Close Air Support: How Interservice Rivalry Affects Roles and Missions" (Master's thesis, U.S. Army War College, 2007). However, the Army does not passionately pursue the capability outside of times of conflict either, preferring to train with its organic artillery capability for fire support. The tendency reflects both the inconvenience of joint training as well as an inherent desire to be self-sufficient whenever possible.

echelon leader with central authority. This conflict will only gain frequency and volume as weapons systems' standoff ranges and ISR capabilities grow.[924]

Another Mexican standoff looms in the fundamental arena of what is considered 'combat' and what services recognize as such. A recognition that the U.S. military "freely and noisily" recognizes "exceptional suffering and hardship"—and less so tactical prowess or strategic clear thinking—raises the specter that the armed services, out of a skewed sense of 'honor,' reward actions that put troops in harm's way and close contact with danger over those which advance a winning cause.[925] Displays of emotion over the validity of combat-action awards and charges that operators of advanced weapons and intelligence systems are somehow exhibiting cowardice threaten to negate their value.

Thorny as these issues may seem, they directly impact combined-arms effectiveness and efficiency. Any effort labeled 'joint,' whether it occurs in the realms of bureaucracy, acquisition, or combat, which does not address these competitive issues is either a waste of time or doomed to failure. Meaningful joint efforts will confront those areas of doctrinal preference where the services are most at odds, but they will not attempt to force ideological agreement. They will instead perform the hard work of adjudicating, as facts allow, among the best options the services can offer. With an accurate set of data in hand, exogenous defense leaders can direct the *best* approach—whether it is a unitary or cooperative 'joint' effort—that the services, stuck with 'fairness' as an inevitable outcome of bureaucratic logrolling, would not pursue on their own.[926]

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[924] One might expect that disputes of this sort will more frequently arise among the services that usually fight on or over land. Operational control of Marine aircraft will be an enduring issue, as the unified Marine Air-Ground Task Force (MAGTF) concept competes with the Air Force's ideal of theater-wide centralized control. A similar issue will appear when the Navy makes a contribution to land warfare with its air power assets.

[925] Lexington, "Medals for Drone Pilots?," 33.

[926] The approach described here is not easy, popular, or fast. McNamara's attempt to exercise this kind of decision-making with regard to the TFX program serves as a warning to the responses the services will likely exhibit. It also demonstrates why listening to the services with respect to their equipment requirements is just as important as

The observed trend with respect to this dimension of jointness is a tradeoff between institutional and materiel improvement. Materiel solutions tend to be easier to implement, as they are less likely to interfere with any service's strategic preference or theory of victory outright. Yet materiel solutions have a short-lived effect, as they are almost always overcome by enemy ingenuity in the field. Inter-organizational improvements, most notably command-and-control schemes, are a type of cooperation that is more difficult to initiate but also more likely to provide lasting results. Somewhere in the middle lies training, which brings extant materiel and organizational habits together in rehearsal, where those with a willingness to look can identify shortfalls and remedies in both areas. Practitioners of jointness should realize that training efforts do not wither solely because of inconvenience and expense. The very act of exercising jointly forces confrontation of service ideologies, a challenge to institutional thinking that normal bureaucratic forces seek to quash.[927] Endogenous members who are interested in improving joint efficacy have a responsibility to advocate for overcoming institutional barriers, and exogenous leaders should intervene on their behalf when they cannot.

Figure 2. 'Joint Potential' parameter of jointness

objective control of the military by the executive branch. The TFX was an example of excellent management principles (full-spectrum analysis) plagued by shortsighted and dogmatic execution (the *diktat* of commonality).
[927] The most obvious example uncovered in this investigation was CAS incorporation at the JTC early in OEF and OIF, which led Air Force leaders to complain that Army field commanders left their training evolutions with no appreciation of how air power could contribute to maneuver warfare. The situation improved over the duration of the conflicts, but it is by no means perfected, and will likely get worse as interest in CAS fades.

C. Aligning multi-level interests

This parameter of jointness acknowledges the presence of structural fixtures in the defense-establishment bureaucracy that can help or hinder the pursuit of jointness. While the demarcations this work used to describe the strata (endogenous, meso-organizational, and exogenous) are somewhat arbitrary, they proved useful as a qualitative descriptor of how and where opportunities and obstacles for jointness arise. The theme that emerged across the case-study analyses, though, was the need to find a coalescence of interests as a precondition for joint cooperation. This renders the exact points of division among the strata somewhat irrelevant; it is enough to know that relatively high- and low-strata interests converge in successful endeavors.

AirLand Battle's roots lay in a perceived security imbalance that created concern at the highest levels of U.S. government, which in turn transmitted this concern to the military and other organizations. Thus, an interest in providing a security solution existed throughout the exogenous defense establishment. That interest penetrated into the Army, representing the endogenous stratum, where two influential TRADOC generals saw a link between the exogenous interest and their institution's desire to escape the doldrums of Vietnamese COIN warfare. Shrewdly, these leaders reached out to a subset of the Air Force—the Tactical Air Command—that happened to be growing in influence and would soon represent the most dominant vector of its parent institution's thinking. As interests coalesced across endogenous levels, AirLand battle found acceptance in the meso-organizational stratum (both the Joint Chiefs of staff and the regional combatant commanders), because its constructs could effectively address interests there as well. Having constructed a system that unified interests across all three levels to answer an externally imposed security problem, AirLand Battle was capable of sustaining its own momentum and became a stable system of military thought for several years.

Aspects of the JPATS effort were similar, though impetus arose first not from world events but within the exogenous defense establishment (i.e., Congress), who transmitted its wishes to the Air Force. Just as in the case of AirLand Battle, military leaders in the Air Force's training command proposed a plan that met Congress' requirements and their own preferences—in this case the operative endogenous desire was to structure primary pilot training in accordance with service philosophies. Mimicking the outreach of TRADOC generals fifteen years earlier, Air Training Command (ATC) enthusiastically embraced its Navy counterpart and presented a plan that met nearly all of its sister-service's desires for a trainer, including avoidance of many of the risks attendant in leading an acquisition program. After teaming together, both services worked to present their approach simultaneously at the meso-organizational level in briefings to the Joint Requirements Oversight Council (JROC), even while they built momentum at the exogenous level through continued salesmanship on Capitol Hill. Once DoD became involved, directing an increase in the scope of jointness through a mandate for joint training programs, the coalescence of interests was complete. The prospects for joint success were then strong enough to overcome the friction of what proved to be a difficult competitive contracting process.

The COIN air power cooperation, in contrast with the first two examples, represents a rather weak coalescence of interests. Like AirLand Battle, its cause was an externally imposed security situation—anti-terror conflicts prosecuted in Afghanistan and, later, Iraq. While the fear of losing or performing badly in combat drove an initial push to overcome two of the most chronically neglected aspects of combined-arms cooperation, the mutual drive exhibited was patchy at best. Congress never really became involved at the exogenous level; its perennial unwillingness to comment on ongoing combat operations does not offer a substrate for jointness to take hold. Stepping in to the exogenous breach at times was DoD, but drastically different

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guidance from two successive Secretaries of Defense, especially on the topic of ISR, left more

room for confusion and finger-pointing about why cooperation was poor and fewer clear

priorities or directions to seek joint solutions. DoD, like Congress, muddled through on the

matter of overarching military strategy, never addressed head-on the competing theories of

victory, and accepted a series of compromises among the various light-footprint, regime-change

schemes and troop-intensive COIN strategies advanced.[928]

Another factor germane to this parameter of jointness, derived from observing OEF-OIF

cooperation, is the tremendous preference gap between the services in style of warfare and

theory of victory. When organizations are unconstrained in their pursuit of goals, when their

aims are aligned with institutional values, and when they are able to use processes with which

they are comfortable, they are better able to cooperate with peers. On the contrary, when they are

faced with tasks that fall outside preferred or core competencies and are reliant on lateral

organizations to complete those tasks, the potential for conflict is high.[929] The Army made a

reluctant return to embrace COIN warfare, perhaps in a bid to remain relevant in a war that

started with an impressive showing of air power combined with small-footprint ground forces.

The Air Force failed to embrace this philosophy, and was pushed there forcefully by mid-conflict

coercion from Secretary of Defense Robert Gates. The Air Force's initial perspective was not an

irrational bureaucratic position to adopt, as the large-force idea did not receive support from

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[928] Describing debate about strategies for the invasion of Iraq, James Fallows commented, "Rumsfeld proposed something like 75,000 U.S. troops for the invasion force. The Army had in mind something closer to 400,000." Rumsfeld's relentless insistence on a small force gained the upper hand, but back-and-forth negotiations modified his position as well, resulting in a 140,000-strong invasion force and "hybrid" war plan; see Michael Kirk, "Bush's War: Part I," in *Frontline*, ed. Tim Mangini (Boston: WGBH, 2008).

[929] An alternate explanation, borrowed from Erik Voeten's work in international relations theory, is simply that dominant regimes invite resistance; see Erik Voeten, "Resisting the Lonely Superpower: Responses of States in the United Nations to U.S. Dominance," *The Journal of Politics* 66, no. 3 (2004): 747-48. He described how the U.S. is "increasingly isolated in multilateral organizations" to an extent not fully explained by differences in national preference; ibid., 729. Extending the analogy, the Air Force may have resisted the dominant COIN framework that shaped OEF and OIF not simply because it has a preference for strategic effect and centralized control, but rather because it did not originate the concept and witnessed it become the dominant idea for more than a decade of conflict.

DoD until halfway through the conflicts—it then took the forcible removal of senior Air Force leadership to make the cultural change clear. Throughout the conflicts, the Air Force's ideals of centralized control and strategic effect competed with the Army's boots-on-ground, manpower-intensive theory of victory and its demand for support to surface forces—apportioned according to geographic area, not necessarily by strategic importance.

As Builder, Ehrhard, Donnithorne, Cannon, and others have described in detail, the services have pre-existing notions about the type of conflicts in which they see their greatest opportunity to contribute. A recurring theme in the contests they visualize is "high-intensity warfare against a sophisticated enemy."[930] This is a visionary backdrop against which commanders can easily motivate their tacticians. It is easier to 'sell' to the nation, too, which is why advocacy for COIN warfare expertise makes only sporadic appearances in U.S. defense history. The sweeping scale of major combat, along with its promise for joint and combined arms, does not constrain discussion within the bounds of roles-and-missions infighting the same way COIN does. There is plenty of worthy employment to go around; no service has to abandon its primary mode of fighting or the means with which it fights. The preference for this kind of warfare and the urge to be prepared for it is why the Air Force will pursue the F-22 and F-35 fifth-generation fighters even during a time of shrinking defense budgets, for example.

By contrast, when the resources available to originate, train, and equip forces for unconventional conflict begin to disappear under budget constraints, the services' thirst for cooperation quickly gets sated. As budget contraction in 2014 revealed, *intra*-service disputes alone are enough challenge for the endogenous defense organizations; the attention available for

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[930] This was the context senior military leaders provided to Army and Air Force AirLand Battle planners; Davis, *The 31 Initiatives*, 3. For the same sentiment applied to all three services in the context of WWII, see Builder, *The Masks of War*, 132-33.

pursuing and executing cooperative inter-service programs is predictably low.[931] As an Air Force budget planner remarked in 2014, "The system rewards a lot of bad behavior."[932, 933]

Cannon prescribed a common vision of what the joint force was to accomplish as a means to reconcile competing theories of victory and reduce the principal-agent preference gap; he recommended brute-force joint constructivism for each new case. As Chapter 7 discusses, he is in good company with many senior flag officers (and other defense professionals) who have an innate trust in the ability of a singular concept of operations to drive jointness by overcoming inter-service friction and competition.[934] Cannon was correct to say that traditional means of agency-theory enforcement—monitoring and sanction of wayward agents—by itself would be ineffective.[935] He instead advocated the practice of 'constructed' joint cooperation, and the case studies examined here reveal that there are several tools available to the would-be constructivist.[936] One means involves causing the coalescence of the interests of one service subgroup with the interests of another (TRADOC with TAC for AirLand Battle, training command pilots in ATC and NATC in the case of JPATS, and Air Force UAV operators with the

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[931] Stephanie S. Kostro, "Internal Army Tensions Put National Security at Risk," *CSIS: For Your Situational Awareness*, March 2014, 2-3. https://csis.org/files/publication/140321_ISP_newsletter_FYSA_MARCH_2014.pdf.
[932] Babcock interview, 21 March 2014.
[933] Contrast the consistent drive to acquire fifth-generation fighters with the foot-dragging exhibited for COIN air power and the case of "a plane that can provide effective precision close air support and JTAC training, and costs about $1,000 per flight hour instead of the $15,000+ they're paying now." Such a need was "obvious around October 2001," but "took until 2008 for this understanding to even gain momentum within the Pentagon. A series of intra-service, political, and legal fights have ensured that these capabilities won't arrive before 2015 at the earliest, and won't arrive for the USAF at all;" see "LAS In, LAS Out: Counter-Insurgency Planes for the USA and Its Allies," *Defense Industry Daily*, 3 October 2013. http://www.defenseindustrydaily.com/las-in-las-out-counter-insurgency-planes-for-the-usa-and-its-allies-010548/.
[934] Sixty-seven percent of respondents to this study's survey (sample size = 54; response rate = 65 percent) felt that "a compelling, shared strategic vision that motivates services to pursue a common goal" should be the "primary reason for joint cooperation." An additional five percent cited it as partial motivation for jointness, though this subset of respondents refused to commit to a single primary cause; Paul R. Birch, "Survey of Views on Joint Cooperation," (Unpublished survey of case-study interviewees, 2014).
[935] Cannon by no means dismissed either monitoring or sanction, arguing that the former should be sufficient to give the principal (which is, in his formulation, the joint force commander) an accurate picture of what is happening (without crossing into micro-management) and that the latter should provide a real means of punishing or relieving wayward component leaders (without being too draconian); see Cannon, "Cleaning Up the Joint," 297-98.
[936] "Put simply, the structural, normative approach has run its course and likely taken jointness as far as it can, perhaps in the wrong direction. The alternative is a constructivist approach;" ibid., 298.

Army's increased demand for remote ISR). As organizational cooperation literature teaches, effective facilitation of cooperation is the ability to find unused "organizational slack" then coordinate, communicate and adapt in kind among organizational goals, preferences and work procedures; the result is organizations that work on a task for a period of time as an apparent single body, even though in reality the 'unitary' actor consists of groups with many disparate and divergent goals.[937]

Combat, or the impending threat of it, puts the fear of failure at the forefront of military personnel throughout the ranks, and reaches up into the exogenous levels of the defense department. As a senior Joint Staff officer wrote, "the level of jointness right now is the highest it has ever been, but there is still lots of room for improvement;" his chief concern was "that we will lose what we have gained from OIF and OEF after we draw down in Afghanistan."[938] He also indicated that the services would "fight to maintain that level" of cooperation, but that with budget cuts would come a loss of opportunity for joint exercises—the only way to maintain joint capabilities short of getting actual combat experience.[939]

Ironically, though wartime contingencies present the most obvious and pressing need for cooperation, they are also likely to incite visceral and reactionary responses among the services, which instinctively revert to their operative theories of victory and operational preferences. While war may provide an initial impetus for jointness, it in no way guarantees that interests will align over a long time period. The example from COIN air power is instructive as follows: the Army and the Air Force immediately recognized a reason to improve joint integration, but found it difficult to build lasting methods to effect this integration as competing theories of victory and

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[937] In this formulation, the organizational slack must be of a sufficient amount that it allows completion of the task without bankrupting the reserve of intangibles that keep the "coalition" together; see Richard M. Cyert and James G. March, *A Behavioral Theory of the Firm* (Englewood Cliffs: Prentice-Hall, Inc., 1963), 42.

[938] Roberson interview, 21 March 2014.

[939] Ibid.

operational preferences prevented their interests from coalescing. Organizational slack is at a

premium when it comes to services defending their existing habits of warfare.[940] Sub-groups

comprised of specialists within each service may have a common viewpoint of the battlefield that

could coalesce into jointness, but sub-group affinity rarely overcomes the stronger influence of

service identity.[941] Compounding the problem is the reluctance of the higher exogenous defense

establishment—Congress and the President—to take part in the unequal dialogue that could

break the resultant logjam. The need for someone willing and able to overcome these daunting

challenges speaks directly to the fourth and final dimension of jointness.

Figure 3. 'Aligning Interests' parameter of jointness

D. The role of individual leaders
If outside influences usually drive jointness, it seems equally evident that specific individuals

will play an outsized role in any cooperative efforts that come to fruition. This trend is in view in

all of the case studies incorporated in this work. A few of the relevant factors at play in this

parameter are the leader's position within the defense establishment, his or her ability to build

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[940] Andrew Abbott's argument about the theory of professions predicts the same challenge through a different means of reasoning, one that relies on the institutional credibility of each service, who have all staked their identity on a given theory of victory and preferred means of operating; see Abbott, *The System of Professions*, 62-65. This is why AirLand Battle writ large was an easier 'sell' than improved CAS and ISR coordination mechanisms: the unconstrained battlefield envisioned in the former did not constrain service preferences or judge one theory of victory inferior to another in the way that air-ground support compromises inevitably do, at least in the eyes of arrantly parochial advocates.
[941] This is consistent with Jeffrey Polzer's finding that subgroup members "with strong organizational loyalties may undermine the [collective] endeavor in the name of protecting organizational interests, ultimately hurting the organization in the process," assuming that, as Thomas Mahnken found, service loyalties tend to trump cross-service subgroup loyalties such as pilot, infantryman, etc.; see Polzer, "How Subgroup Interests and Reputations Moderate the Effect of Organizational Identification on Cooperation," 93.

consensus across the levels of that structure, and the arena in which he or she seeks to pursue a cooperative effort.

For AirLand Battle, all evidence points to Army TRADOC generals as being the most influential thought leaders who gave the concept its final shape. General Starry built on the foundation that General DePuy had laid, but they each responded to the external demand for a security-problem solution. Both actively cultivated relationships across service lines and socialized their entire effort widely within the defense establishment. With cooperative momentum thus imparted, the greater effort benefited from the instincts of two joint-minded service chiefs who gave the effort its most visible cooperative entailment, the pursuit of the 31 Initiatives.

The JPATS case study explicitly referred to the notion of a heterogeneous engineer, one who worked among available nodes of opportunity to cause a stable system to emerge. Using the leverage of congressional pressure and the political appeal of jointness, Air Force executive leaders and action officers, later accompanied by Navy counterparts they had convinced through careful persuasion and accommodation, drove the idea of a joint primary trainer to its status of acceptance throughout all strata.

This investigation found that COIN air power support suffered from a dearth of common inter-service interests and thus had to settle for mostly technological innovations to foster joint cooperation. Only a few (relatively underwhelming) command-and-control advances appeared. Where progress does appear, though, both in operational as well as materiel innovations, the leadership of individuals was pivotal. The example of Rover video data-link development is particularly compelling, as it witnessed individuals from deep within the endogenous levels of their respective services make an exceptional plea for the new system that enabled novel

combined-arms practices. With their enthusiasm and willingness to build consensus, interest coalesced across all levels of the defense hierarchy, and the nice-to-have system became part and parcel of the joint cooperative effort. In so many CAS scenarios, it is now the prime facilitator. Heterogeneous engineering can be frustrating when one is working against so many dissociative forces and has so little bureaucratic power, but the lesson here is that it is nonetheless possible. The person attempting must have an iron will and the ability to persevere in the face of detractors and criticism, because "[a] majority of the interaction between organizations in crises"—and the nature of military organizations makes virtually every cooperative opportunity fit such a description—"both in decision-making situations and over the course of a crisis, are conflictual."[942]

Human beings, while demonstrably capable of cooperation, still fail mightily at it, even when it would be individually or collectively beneficial to them.[943] Exhibiting a sufficient degree of self-assurance in a combative situation such that one remains able to pursue a common good is in tension with the threat of outright aggression, which acts counter to all cooperation, including

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[942] Svedin, *Organizational Cooperation in Crises*, 125. Recall that a crisis is a "serious threat to the basic structures of the fundamental values and norms of a social system, which—under time pressure and highly uncertain circumstances—necessitates critical decisions;" Rosenthal, Charles, and 't Hart, "Introduction: The World of Crises and Crisis Management," 3. While the definition is somewhat extreme, it is difficult to conceive that a programmatic or battlefield decision in a military organization would not be couched in such dramatic terms.

[943] Behavioral science characterization of aggression, competitive behavior, and cooperation among humans is a segment of the field that defies succinct summary, but a few observations are helpful in discussing the reasons why aggression supplants cooperation. A central theme that has seen its way into social-science research via both philosophy and evolutionary biology is the 'Lorenzian theory' (after Konrad Z. Lorenz) that aggression is an "ineradicably instinctive behavior," regardless of social mores and context; for a description and rebuttal, see Samuel S. Kim, "The Lorenzian Theory of Aggression and Peace Research: A Critique," *Journal of Peace Research* 13, no. 4 (1976): especially 254. One dominant service influencing national strategy for a protracted time may inhibit cooperation. If inter-service relations can be modeled as economic interactions, research would suggest that a chronically wounded sense of pride can be deleterious to cooperation, because "[w]hen a person's sense of individual or group honor is repeatedly violated in economic interaction, the reaction may include the release of aggression to repair damaged honor and establish self respect;" see Vern Baxter and A.V. Margavio, "Honor, Status, and Aggression in Economic Exchange," *Sociological Theory* 18, no. 3 (2000): 399. The notion that cooperation "has not evolved in some animal species because of cognitive constraints" may be an epithet one is tempted to hurl in frustration at a recalcitrant inter-service counterpart, but the finding is derived from the study of lesser animals and probably does not merit extrapolation to humans; see Jeffrey R. Stevens, Fiery A. Cushman, and Marc D. Hauser, "Evolving the Psychological Mechanisms for Cooperation," *Annual Review of Ecology, Evolution, and Systematics* 36(2005): 499.

jointness.[944, 945] Constricting channels of communication more than incompatible radio systems and causing more angst than differing philosophies about what ultimately wins a war, superiority complexes degrade joint relationships faster than unsuitable materiel or enemy action.[946] The acidic effect of unrestrained egoism on joint relationships has in the past appeared as acrimonious exchanges in the press or a refusal to communicate.[947] The OEF-OIF case study suggests that some of the most damaging relations are those continued through a veil of polite behavior that masks a complete disregard for the perspective and experience of another service.

The destructive nature of arrogance—real or perceived—works through at least two distinct mechanisms: a loss of faith and goodwill between peers and the promulgation of increased conflictual behavior by an organization's members, which exacerbates a cycle of diminished trust.[948] Verbal salvos in these wars of words appear as offensive or defensive in

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[944] Among those interviewed about jointness for this work, most cited trust as a necessary condition for joint cooperation. Reasoning by Freudian analogy, Edward Hoedemaker argued that aggressive individuals are hobbled by distrust and display a need to "take over" others, even though the others may be trustworthy and capable of mutually beneficial helping behaviors. This unfortunate outcome can extend to organizations, and cannot be overcome by "persuasion or argument;" see Edward D. Hoedemaker, "Distrust and Aggression: An Interpersonal-International Analogy," *The Journal of Conflict Resolution* 12, no. 1 (1968): 71, 74.

[945] Compounding the difficulty is research that suggests participants in a competitive game attribute the presence of conflict in a game to their counterparts, even if they themselves induce it, and that neither reciprocation nor coaxing produce more helping behavior than simple cooperation, suggesting that even gestures of goodwill among joint rivals will often be scattered on hard ground as a matter of the vagaries of personality; see Warner Wilson, "Cooperation and the Cooperativeness of the Other Player," *The Journal of Conflict Resolution* 13, no. 1 (1969): 114.

[946] Research pertaining to sports teams suggests that "internal rivalry and conflict" in teams can lead to "consistent increments in performance," but that "internal conflict must be kept within limits if it is to contribute to team effectiveness;" see Günther Lüschen, "Cooperation, Association, and Contest," *The Journal of Conflict Resolution* 14, no. 1 (1970): 22. This concept of 'competitive association' is consistent with case-study conclusions that competitive discussion, even some degree of fighting, fosters joint cooperation more effectively than simply coexisting in relative silence alongside a service or component that one views unfavorably.

[947] Threats or fear that lead to communication can be more deleterious than open conflict, rendering "the determinants of action as much a consequence of fantasy and fear as of an appraisal of reality. Corrective information about motives, tools, or plans are left to speculation and the machinations of fear and anxiety;" see Elton B. McNeil, "Personal Hostility and International Aggression," *The Journal of Conflict Resolution* 5, no. 3 (1961): 284.

[948] Antonia Chayes described analogous effects from U.S. behavior with respect to international treaties, finding that "American exceptionalism" and that "[f]ew senators will vote to ratify a treaty over the opposition of their constituents." The outsized representation of conservative special interests results in "selective multilateralism" that manifests itself as "uncooperative treaty behavior" and has "undercut essential international cooperation;" see Antonia Chayes, "How American Treaty Behavior Threatens National Security," *International Security* 33, no. 1 (2008): 49, 72, 47, 48, and 74.

nature, depending on an observer's perspective. An example is Charles Dunlap's statements about the Army and Marine Corps' joint effort on a 2006 counter-insurgency manual, which he found to be insufficiently informed with an "air-minded" perspective.[949] Dunlap's provocative phrasing ("In reality, American ground force commanders often do not understand how to use air- power effectively and efficiently"), a tone that suggests a persecution complex ("Airmen believe that U.S. ground forces are the finest in the world. Unfortunately, that feeling evidently is not mutual"), and slanted evocation of Operation Anaconda ("although fixed-wing air power eventually rescued the operation from serious difficulties and accounted for most of the terrorists killed in the operation, the Army commander nevertheless denigrated the Air Force's efforts in a subsequent magazine interview") might play well to air power proponents as a defense of essential points that would otherwise go unmade.[950] But to many, they might seem an offensive strike by air power advocates against surface forces, carried out, as Leo Tolstoy described, "with a boldness characteristic of people employed in country not their own."[951]

Given the number of barriers to joint cooperation, a frustrated military leader might opt for a go-it-alone approach in trying to force what he or she perceives to be necessary changes. However, for the exact same reasons that the obstacles are effective, such behavior is likely to doom any reform efforts, and is likely anathema to any definition of 'jointness.' One need not be as radical or petulant as Billy Mitchell on a bad day, either. Simply failing to find another group with shared interests when trying to invigorate an initiative may doom an initiative to obscurity. National bureaucracies offer too many processes to delay even the most promising ideas and too many opposing constituencies to ignore these kinds of forces. Having attained a coherent vision that unites a few, the purveyor of jointness must be creative in finding out how to interest more

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[949] Dunlap, "Air-Minded Considerations for Joint Counterinsurgency Doctrine," 63.
[950] Ibid., 68-69.
[951] Tolstoy, *War and Peace*, 1319.

participation in that vision. Very likely, compromise and even some heresthetic art may be required to keep the vision intact and overcome ubiquitous bureaucratic friction.[952] Luckily, opportunities for logrolling abound as well. Talented military leaders with some degree of political acumen are therefore absolutely essential if jointness is to be a reality.

Even in praising the actions of so many individual military leaders, though, it is necessary to acknowledge the frequent appearance of exogenous forces in their motivation. All of the case studies in this work were contemporary with the development of or followed the passage of Goldwater-Nichols. Is it reasonable to speak of a 'joint-minded' military leader outside of this context? Would implicit fears of retribution for poor combined-arms performances be ingrained in the military psyche absent legislation and days of probing testimony? Would the musicians show up if Congress did not print the program? Proof of negative, counterfactual outcomes is impossible, but it seems that quite a bit of credit is due to the exogenous work that made 'joint' and 'purple' a more earnest part of the Pentagon vernacular. This returns us to an appreciation of the external motivators for cooperative military action, and brings the dimensions of jointness back together in a full circle.

Figure 4. 'Leadership' parameter of jointness

A Combination of Factors
The parameters that describe jointness are individually complex; taken together, the picture they provide of jointness threatens to be intricate in the extreme. However, simple visualization of the

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[952] Riker wrote that the "fundamental heresthetical device" for someone who might otherwise lose a political decision is to "divide the majority with a new alternative, one that he prefers to the alternative previously expected to win;" see Riker, *The Art of Political Manipulation*, 1.
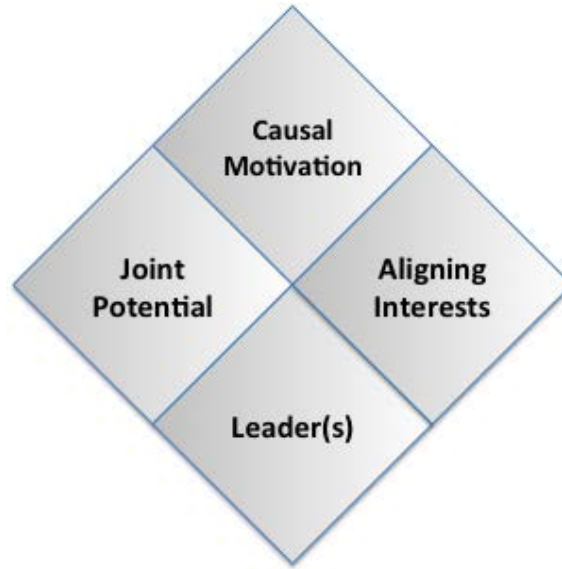
Figure 5. Envisioning combined parameters of jointness

probability of cooperation afforded by any single parameter allows a first-order combination that may provide an idea of the likelihood, utility, and staying power of the cooperative efforts that arise for a given security concern. Picture the spectra for each parameter placed on end and viewed from a left-hand orthographic view. If a favorable position along the spectra of joint parameters corresponds to a brighter projection at the left end, the resulting view shows at a glance a prediction of overall joint prospects. Some application examples, approximated from the case-study analyses, appear below in Figure 6.
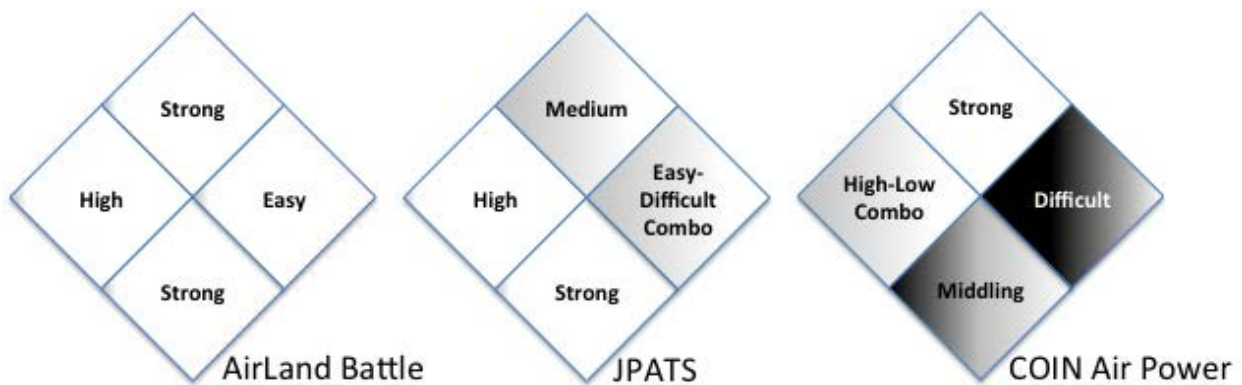
Figure 6. Examples of parameter combinations

III. Elements of Definition
A. Foundations of a Better Definition

The quest for a pre-theory continues with a search for a more precise definition of 'jointness.'[953]

Chapter 1 established that the term is used in many contexts and with diverse meanings; such

flexibility may afford political utility, but is unhelpful for measuring the value of proposed or

observed joint efforts. Martel described the definition and theory of 'victory' to be undetermined

and subsumed in the pursuit and philosophy of strategy. 'Jointness,' since its pursuit is often

assumed to be a necessary component of military strategy, exists in a similar state of

subordination to a larger abstract concept.

The search for a refined definition begins with an examination of the word 'joint' itself. In

ordinary usage, the sense appropriate for this investigation means, "combining the efforts of two

or more people or groups of people."[954] Its etymology derives from the biological meaning of

'joint,' the Latin *junctus*, a participle of *jungere*: 'to join.' Both are related to the Modern Latin

jugularis, the all-important joint at the top of the spine through which the lifeblood flows and

atop which the decision-making center rests, an apt metaphor for the command-and-control

meanings that pervade military usages of 'joint.'[955] Another definition from normal usage,

"shared by or common to two or more," is the origin for the commonality that 'jointness' often

implies in military usage.[956] The meso-organizational glossary that purports to define all military

terminology provides the specialized definition that motivates this study, connoting "activities,

operations, organizations, etc., in which elements of two or more Military Departments

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[953] Martel began his pre-theoretical framework with a "systematic search for a definition of 'victory;'" see Martel, *Victory in War: Foundations of Modern Military Policy*, 83.

[954] *Merriam-Webster Online Dictionary*, (Springfield MA: Merriam-Webster Inc., 2013), "Joint (2)" (adj.), http://www.merriam-webster.com/dictionary/joint.

[955] Ibid.

[956] *Webster's Illustrated Encyclopedic Dictionary*, (Montreal: Tormont Publications, 1990), "Joint," (adj.), 906.

participate."[957] To a U.S. military audience, 'joint' is distinct from 'combined,' which identifies "two or more forces or agencies of two or more allies operating together."[958]

Martel noted that the descriptive utility of 'victory' struggles to differentiate magnitude; it can indicate prevailing in everything from a tactical skirmish to the grand-strategic vanquishing of an enemy.[959] 'Jointness' suffers from a similar—though qualitative, not quantitative—malady in military jargon, because the bar for its use is also low. It merely takes the participation of "elements of more than one military service" to earn the label, an overbroad criterion that is not helpful for separating the helpful from the showy or deleterious.[960] Yes, 'joint' indicates the participation of two or more services, but "activities" and the other nouns in the definition can include almost anything, including unproductive arguments and spiteful sabotage.[961] This meaning allows the Mitchell-Moffett exchanges, the 'Revolt of the Admirals,' and Army-Air Force arguments over Operation Anaconda to qualify as 'joint fights,' but certainly not in the helpful, synergistic sense the Joint Staff's large publishing enterprise hopes to imply in its glossy pamphlets. It is necessary, therefore, to modify the definition of 'joint' with some additional constraints that give it a clearer and more useful meaning. Such delimitation can come from considering those things that are useful and desirable to be achieved from joint cooperation and negative or harmful consequences that it might help avoid.

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[957] *Joint Publication 1-02: Department of Defense Dictionary for Military and Associated Terms*, 15 March 2014 amended ed. (Washington DC: Joint Chiefs of Staff, 2010), 139.

[958] Ibid. Usage is not always consistent, however. For example, Euro-NATO *Joint* Jet Pilot Training (emphasis added) is a specialized U.S. Air Force program that incorporates training for students of many foreign, allied air forces. It is therefore *combined*, but not *joint*, according to the U.S. military establishment's own definitions; see ibid., 'combined,' 45. Treaty language and tradition will keep ENJJPT's name and familiar acronym unchanged for the foreseeable future. A further exception: a 'combined arms team' denotes intra-service participation in a military operation; see ibid., 'combined arms team,' 45.

[959] *Victory in War: Foundations of Modern Military Policy*, 85-87.

[960] *Merriam-Webster Online Dictionary*, "Joint (2)," (adj.).

[961] The full definition reads as follows: "Connotes activities, operations, organizations, etc., in which elements of two or more Military Departments participate;" *JP 1-02 (2014)*, 139.

Proponents of jointness have an implicit expectation of inter-service 'cooperation,' "an act or instance of working or acting together for a common purpose or benefit."[962] This may further imply that they 'share,' i.e., "to use, participate in, enjoy, receive, etc., jointly."[963] To some—including those who drafted early defense reform legislation—'unification,' "the process of becoming a single unit" or "a combination or union of parts into a whole" is a goal of jointness.[964] The purpose of every defense-reform initiative since the turn of the twentieth century has focused on unification through the centralization of power in a defense bureaucracy of growing power and authority. The brief discussion of the Canadian experience in Chapter 2, along with the realities observed in the previous U.S. case studies, suggests that this means of encouraging cooperation is a bit too hopeful—on some facets, it probably exacerbates agency issues instead of solving problems, burying them in an impenetrable central bureaucracy. Nonetheless, some degree of 'integration,' "an act or instance of combining into an integral whole" from the services is undoubtedly an expectation throughout the defense establishment, even at the endogenous-service levels, who at their best realize a need for assistance and the potential for genuine synergy.[965]

Additional positive consequences of jointness include efficacy and efficiency. Monte Cannon argued that the pursuit of each, through improved command-and-control measures, was a worthy goal for the study of jointness.[966] 'Efficacy' is the capacity for producing a desired result;" it is potential effectiveness—the ability to do what one wants.[967] 'Efficiency' is "the ability to do something or produce something without wasting materials, time, or energy;" it

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[962] *Dictionary.com*, (New York: Random House, 2014), "Cooperation," (n.), http://dictionary.reference.com/browse/cooperation?s=t.
[963] Ibid., "Share," (adj.), http://dictionary.reference.com/browse/share?s=t.
[964] Ibid., "Unification," (n.), http://dictionary.reference.com/browse/unification.
[965] Ibid., "Integration," (n.), http://dictionary.reference.com/browse/integration?s=t.
[966] Cannon, "Cleaning Up the Joint," 22.
[967] *Dictionary.com for iPad*, (New York: Random House, 2013), "Efficacy," (n.).

describes effects obtained with minimal or comparatively fewer resources.[968] An essential part of the definition of jointness should thus be one that implies a pursuit of efficacy and efficiency. On the battlefield, where efficacy is the paramount measure of jointness, 'interoperability,' describing something "capable of being used or operated reciprocally," is a worthy pursuit.[969] Not only does interoperability ensure that people pursuing common military objectives can work with each other's gear, it may also lead to 'economy of scale,' "a fall in average costs resulting from an increase in the scale of production."[970] The studies reviewed in this investigation suggest that 'commonality,' "a sharing of features or characteristics," may promise efficiency when missions are very closely aligned (as in primary pilot training), but that often the dissimilar fighting styles of the services may make them less efficient than independent purchases.[971] The services, even if they can be persuaded or forced to purchase a common weapons system, see a threat in complete commonality, and will do everything in their power to make their version of the system distinct. This is in view for the T-6 program as much as it is with the F-35.[972]

Another pillar upon which support for jointness rests is a trust in its ability to reduce the waste produced by the multiple, hulking, redundant bureaucracies that backstop national security. To explore this angle, one must examine structural threats to efficacy and efficiency. The waste observed when the services act together consists first of the overlapping resources they expend because none are fully interdependent—think of the 'air force' that each branch of the military

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[968] *Merriam-Webster Online Dictionary*, "Efficiency," (n.), http://www.merriam-webster.com/dictionary/efficiency.
[969] *Dictionary.com for iPad*, "Interoperable," (adj.).
[970] *Collins English Dictionary*, (New York: HarperCollins Publishers LLC, 2013), "Economy of scale," (n.), http://dictionary.reference.com/browse/economy+of+scale?s=t.
[971] *Dictionary.com for iPad*, "Commonality," (n.).
[972] The Air Force and Navy versions of the T-6 are quite differentiated, even though they perform arguably the exact same mission. The various service-specific versions of the F-35 are by comparison designed for missions that are quite different. A RAND report offered, "From the Tactical Fighter, Experimental (TFX)/F-111 program in the 1960s through the JSF program today, the attempt to accommodate multiple operating environments, service-specific missions, and differing performance and technology requirements in common joint fighter designs has increased programmatic and technical complexity and risk, thus prolonging RDT&E and driving up joint acquisition costs;" Lorell et al., *Do Joint Fighter Programs Save Money?*, xvii.

maintains, for example, or the overlap between ground- and air-launched 'artillery.' The second root of waste and inefficiency is the 'shirking,' "the evasion of work, duty, responsibility, etc." that components exhibit because their core ideologies may not align with the theory of victory that underpins a given operational strategy.[973] An illustrative example that includes a temptation to shirk was the Army's boots-on-ground model of victory in Afghanistan and Iraq that competed with a regime-change-and-leave model espoused by members of the Air Force and, notably, DoD leadership, early in the conflicts. While an attempt to measure the *best* model does not seem to have taken place, there is little doubt that the Army, then the Air Force, tacitly or explicitly disagreed with the theories being used.

Other negative entailments of bureaucratic behavior observed in the case studies are 'segregation,' the setting apart of "others from the main body or group; isolation."[974] Aside from the loss of communication that inheres in the shadow of segregation, it may also lead to a hoarding of resources and quarreling. When allied forces are segregated from each other, they tend to put in place strict control measures to prevent fratricide and other negative externalities that occur when a unit crosses another's boundaries. In an information-intensive war, this quickly creates seams where insurgents can hide or data can get lost with the effect of diminishing overall potency in warfighting.

Part of the difficulty in defining jointness is the lack of a framework to relate it to victory. The aims of jointness, no matter what specific entailments one believes it might include, are all ostensibly to enable the military to attain victory more easily. Joint aims might be focused on the relatively short-term goals of a battle or a campaign, or they may serve to insure victory over a longer term, as by improved training methods. As Martel pointed out—and the preceding case

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[973] *Dictionary.com for iPad*, "Shirk," (v.). Explaining and reducing shirking tendencies are, of course, also concerns central to agency theory.
[974] Ibid., "Segregate," (v.).

studies underlined—there is no common theory of victory.[975] To the contrary, there are three or four competing theories of victory, and the services that brandish them show no signs of an ideological surrender. Cannon determined that, for joint operations, a well-articulated mission statement toward a common goal was most likely to overcome "the services' disparate views of war and their attendant visions of victory" that are the core of the joint problem.[976] 'Command,' in the sense used for joint operations, is "the possession or exercise of controlling authority."[977] Cannon, following a Clausewitzian maxim, further specified that command should "formulate strategy that links military means with the desired political ends."[978] Control is "the act or power of controlling; regulation;" in this sense, it indicates the degree to which a commander maintains the "coherence of decentralized operations within and between warfighting domains."[979]

Given the disconnects between the cultures and theories of victory that Cannon, Donnithorne, Ehrhard, this study, and others have exposed, however, there is no single command-and-control method, system, or even general principle that a reasonable person could expect to emerge. Unification is elusive, even when exogenously ordered, and will remain so as long as the services have individual authority to organize, train, and equip their forces. Even if Congress were to change these structural arrangements—a move so politically risky as to preclude its attempt—fundamental differences about how military forces achieve victory will persist. There will be enduring disagreements about the best way to reach efficacy and efficiency,

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[975] Martel discussed the need for and utility of a *general* theory of victory, one that would resonate with the public as well as specialized audiences in the defense establishment. Cannon emphasized that the *military services*, a subset of that establishment, also lack a "coherent joint vision of victory" among them;" see Cannon, "Cleaning Up the Joint," 296.

[976] Ibid., 281. Again, Cannon also realized that the usual, normative ways of dealing with agent-slack issues—increased monitoring and the threat of punishing non-compliant agents by the principal—were unlikely to succeed given the structural power and individual credibility of the services, and that they have in fact had deleterious effect on inter-service cooperation; see ibid., 298.

[977] *Merriam-Webster Online Dictionary*, "Command," (n.), http://www.merriam-webster.com/dictionary/command.

[978] "Cleaning Up the Joint," 280.

[979] See *Dictionary.com for iPad*, "Control," (n.). See also "Cleaning Up the Joint," 280.

and honest arguments will acknowledge this area of tension that must be balanced. Unless these disagreements receive both voice and resolution each time they arise, it is reasonable to expect that service cultural preferences and competing ideologies of victory will remain the most corrosive elements that threaten the beneficial objectives of jointness.

An improved definition of jointness, therefore, recognizes the inevitable competition that appears in any effort to make independent organizations cooperate. It carries with it the implication that some entity or decision-making process must settle these questions if efficacy and efficiency are to be the result. 'Joint' publications that pretend all the services agree—as, naively, do many of the Joint Staff's publications—may be regarded as masks on reality at best and complete delusion at their worst. This is Cannon's fundamental point: authority to resolve these kinds of disputes nominally lies at the meso-organizational level with a joint force commander, but he at best functions to broker weak compromises between components (which are proxies of their sponsoring services) striving to fight their own battles. This study has observed that meaningful movement toward jointness comes primarily from exogenous influences: threat of failure in wartime and the authority of Congress (with cameo appearances by DoD) at other times. Admitting that the endogenous and meso-organizational levels of the defense establishment are even less apt to choose a path of joint cooperation than they are to innovate new warfighting methods and doctrines would move the U.S. away from the denial it has displayed with respect to this issue.

Such realism would also address a final aspect of the inherent tension among the services that belongs in our definition: jointness for jointness' sake is an unwise proposition. If a mission or task can be performed most efficiently by a single service, then that service should get the nod to do it. If there is debate about a service's ability, a shortfall in overall capacity, or a synergy to

be exploited from joint action or acquisition, then jointness should be adjudicated and pursued. Absent compelling evidence that it is worthwhile, though, jointness can become a Sisyphean exercise in pushing together two opposing forces. But were one service allowed to 'win,' it would spur the others who did not on to develop more options for the next round of competition.

B. Summary—A Definition of Jointness

To narrow the definition of 'jointness' to a useful degree of precision without ignoring essential facets of its usage, this work proposes the following meaning: *the directed efforts of two or more services to achieve battlefield efficacy or peacetime efficiency, pursued when required effects or efficiency are unavailable through competitive, single-service means.* This definition is first of all normative; it recommends that jointness prescribe certain actions rather than being simply a descriptive term of art. This working definition advances a hypothesis that 'jointness,' in addition to its multi-service connotation, should demand utilitarian adjudication among other available means.[980] The U.S. military should only pursue joint action when it is measured in good faith against other available alternatives, and it should strive, as far as politics allows, to set aside the ubiquitous notions of 'fairness' that plague contemporary philosophical discussions. Jointness is desirable to the point that it allows military services to achieve an effect on the battlefield or efficiency in performing necessary tasks that would not otherwise be able to attain on their own.[981] Equal service representation, uniform resource allocations, or matching media 'face time' are of little value in this formulation.

Jointness as a contemporary term has an agreed-upon descriptive meaning, but flounders in its ability to provide prescriptive structure to military-strategic problems because the meaning is

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[980] 'Efficacy,' meaning *the capability to produce an effect*, appears deliberately in the definition in lieu of 'effect.' Joint efforts should be weighed as if the resultant effect were available and used the best possible ends. Outcomes due to bad or prejudiced generalship should not be part of the adjudication, as they are a symptom of a different problem.

[981] On the battlefield, efficacy outstrips efficiency as the measure of greatest interest. The relative standings of these metrics are reversed in peacetime. David Johnson recommended this priority for combat effectiveness; Johnson interview, 24 February 2014.

so wide. Labeling something 'joint' does not currently acknowledge the implicit clash of service cultures and theories of victory that happen anytime a difficult decision confronts the U.S. military. A better usage of 'joint' would be one that, paradoxically, emphasizes competition over cooperation. It would align with the recommendations of Sapolsky, Gholz, and Talmadge, who found value in moving toward greater decentralization and competition among the services. When one service can present an idea that offers it a "chance of disproportionate gains or lower losses," ensuing competition gives the exogenous defense establishment real options to choose from; it need not settle for whatever back-room compromise seems least objectionable to the Joint Chiefs.[982] The services should compete against each other in the realm of ideas, and their best offerings should face off against each other. Most often, an inter-service amalgamation of approaches will still result, but it will benefit from the underlying competition.

Such a prescription is admittedly difficult for two reasons. First, it takes a whole military career—and a host of special security clearances—merely to be acquainted with the universe of available service capabilities. The people who attain these positions have certainly been steeped in the ideologies of their sponsoring service, though, and have likely attained their rank by demonstrating unwavering fealty to a few parochial dogmas. Unfortunately, their upbringing makes them less likely to honestly engage competing ideas if it appears that the clash might result in the discrediting of a premise that is foundational to their services. The second reason is that all parts of the defense establishment gain in the short term from an amorphous definition of

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[982] The authors offer a nuanced understanding of the basic philosophical question that underpins the question of joint cooperation. In describing the modern U.S. defense establishment as consisting of two centers of power, the civilian DoD and the military Joint Staff, they make three cogent observations: 1) there is an incessant call for more centralization when there are budget or military crises; 2) playing DoD civilians against the military hierarchies leads to collusion among the military services, which produces politically passable but militarily mediocre short-term solutions; and 3) indecision about the best way to solve security problems is acceptable, because the solutions to emerging and future security problems are by definition unknown entities—a planner's desire to seize upon a "best" course of action for the sake of efficiency risks failure at the hands of an enemy who finds away around that course of action; Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 164.

jointness.[983] Programs are more likely to garner support, whether in the Pentagon or in Congress, if they carry a 'joint' label. Up to this point, 'jointness' has not lost the luster that condemned 'commonality' to the dust heap of Pentagon usage—broad enough swaths of the defense audience assume it means 'cooperative,' 'efficient,' or 'inexpensive,' depending on their perspective, that programmers do not have to explain why their project is necessarily any of these things or why it is superior to a non-joint option.

This study recommends a *via media* with respect to two facets of the problem of jointness. The first is to realize that the term has different contextual meanings. The second demands that exogenous authorities weigh the options offered by the individual services, but they must always appreciate that these courses of action are tainted by bureaucratic self-interest. This requires much of the U.S. civil-military establishment, but any helpful change would. Because of the tendency toward bureaucratic stasis in the absence of a crisis, jointness precludes a state of ideal existence in a way that students of strategy come to appreciate the elusiveness of an endgame. Strategy and jointness are arenas in which, like the biblical description of the daily struggle against temptation, mankind must continually strive. Empowering and holding accountable senior military leaders for meaningful strategies is out of vogue, at least in the estimation of observers like Eliot Cohen and Tom Ricks. It will require larger amounts of trust, communication, and feedback than currently exist in the defense establishment, and channels of communication must be forged or cleared anew for such a vision to succeed.

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[983] In describing the pursuit of a definition for 'victory,' Martel noted that "it is unlikely that we will be able to formulate definitions for victory that transcend differing political ideologies and world-views or that can achieve the standard of value-free inquiry;" see Martel, *Victory in War: Foundations of Modern Military Policy*, 91. In the same vein, Felix Oppenheim wrote, "Since different actors, and different ideologies as well, are committed to different moralities and ideologies, it is not possible to come up with definitions embarking such irreconcilable world views;" see Felix E. Oppenheim, *Political Concepts: A Reconstruction* (Oxford: Basil Blackwell, 1981), 195-96.

Though the same barriers to a clear definition of 'jointness' exist as those that confront a useful definition of 'victory,' striving for greater clarity in both is an objective worth pursuing. The quest for a normative, competitive, non-ideological definition of jointness is at once the best way to focus on a nearly intractable problem even as it highlights the unlikelihood that military organizations will ever tackle such a problem with objectivity. It is a jumping-off point, suitable for experimentation and critique.

C. Ramifications of the Definition
The definitional elements described above hint at the beginnings of a "theory" of jointness, inasmuch as they relate a pair of observable, quantifiable variables (multi-service participation alongside efficacy or efficiency) through a singular statement.[984] Further, in accordance with Easton, this statement of jointness argues toward an empirically testable general theory. Stated simply, joint options should be formulated and tested against unilateral options, adopted when they provide a greater potential to advance national ends, and rejected when they fall short of this test.[985] This approach is simplistic on its face, but in reality questions about jointness rarely receive this much rigor. Instead, they are tested against even more amorphous concepts such as fairness and service-specific doctrines that hold sway in debates. Theory, according to Crick's formulation, explicitly *excludes* doctrine or ideology, and this proposed definition of jointness argues against the normative prescriptions of specific service doctrines.[986] Indeed, this investigation has found allegiance to service doctrine to be a frequent enemy of beneficial

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[984] David Easton, *The Political System: An Inquiry in the State of Political Science* 2d ed. (New York: Alfred A. Knopf, 1971), 56-57.
[985] As Easton cautioned, though, theories of this type should avoid the conceit of "methodological rigor and precise formulation" associated with the physical sciences; these ideas should be a part of the overall consideration of the conduct of the art of war; see ibid., 58-59.
[986] Bernard Crick, *Political Theory and Practice* (New York: Basic Books, 1973), 13-14.

jointness, hindering the efficacy and efficiency it can otherwise help attain, even while doctrinal practices remain a key enabler of military effectiveness.[987] It is a deep quandary indeed.

Without stipulating the exclusion of doctrinal measures, the meaning of and utility of jointness can vary depending on one's philosophy of war and ideas about strategy. At an extreme, component or service advocates might argue that any capability in their 'most important' domain that gets sacrificed in the pursuit of jointness is too high a price. The other extreme approach is one that blurs 'the military' into a homogenous organization without domain-specific boundaries, an approach that relies more on an inchoate joint doctrine rather than any objective, comparative adjudication.[988] Excising high-level doctrine from decisions of jointness is the only likely way to avoid emotive responses and exaggerated claims that do nothing to advance sober military decision-making. (It is also not terribly likely to happen as long as senior military figures are the ones making the decisions.)

Such an approach to the definition of jointness precludes some of the most troubling artifacts that come to mind when the term is invoked. The promulgation of "least common denominator" joint doctrine is a primary example.[989] Joint publications should not strive to include only those non-controversial statements to which all services could agree (or to which they exhibit apathy)—this approach fails the definitional approach because it precludes

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[987] Crick's description of doctrine is that of a "theory which claims universal validity, because of a belief that all ideas derive from circumstance, but which then also holds that this truth is deliberately obscured by ruling elites, so that the theory only has to be asserted in the form of propaganda to the masses;" see ibid. This description is uncomfortably close to the way in which services have propagated their unique doctrines, especially fundamental ideas about victory in war.

[988] William Lind, for example, advocates that the *sine qua non* of jointness would be "the creation of a full-time—including peacetime—purple general staff, modeled on the Prussians, obviously." He bemoans parochial interests that constrain creative thinkers: "Clausewitz wouldn't last two weeks at West Point. They are shoved out early because they don't fit the cookie-cutter mold or follow the little Mattel soldier mold of 'first this job, then this job, then this, then that' and all of this career-pattern stuff that produces what the second-generation military wants. It says 'Excellence.' It doesn't want excellence; it wants uniform, dependable, mediocrity, and that's what it gets;" Lind interview, 1 July 2014.

[989] David Johnson described joint doctrine as "the least common denominator," i.e., including only those items that the services, each wielding line-item veto authority, found sufficiently non-controversial to allow into joint publications; Johnson interview, 24 February 2014.

maximum efficacy. Such an approach *minimizes* the efficiency doctrine might be able to provide.

Don Snider surveyed three "inputs" to military activities in which he found increasing evidence of jointness: 1) common warfighting strategy, 2) increasing number of joint doctrines, and 3) increasing opportunities for joint training evaluations.[990] This investigation finds little meaningful evidence of progress in the first two areas. Warfighting strategies remain firmly rooted in competing service theories of victory. Joint doctrines at a high level of abstraction are, unfortunately, simply the pablum that gets past the services' ideological screens for publication. What would be better is a sustained and spirited debate about the most compelling theory of victory as it applies to a specific security problem or an ongoing conflict.

At the opposite end of the spectrum of abstraction, there are several useful, lower-level joint publications that reflect dialogue on areas of battlefield specialty, but these are more accurately described as 'procedures' or 'tactics.' They assist in the quest for interoperability and for this reason merit attention and retention. They do not, however, settle any fundamental inter-service disputes and they do not force the services to work together. The causal chain begins with a requirement to work together, either by an exogenous organization or a large threat that one service cannot or does not believe it can confront on its own. The services then develop methods and procedures to facilitate this kind of cooperation, because the threat of failure or ineffectiveness seems unacceptable. This is the kind of jointness observed in the COIN air power case study and is not to be dismissed, but it is a lagging phenomenon and barely outlasts the directive or conflict that gave it birth; it is not a compelling, long-term impetus for cooperation.

The third area (training), however, offers hope for progress. As described in the 'Joint Potential' parameter of jointness, it lies in the contestable middle ground of doctrine and materiel.

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[990] Don M. Snider, "The U.S. Military in Transition to Jointness: Surmounting Old Notions of Interservice Rivalry," *Airpower Journal* 10, no. 3 (1996): 25.

With reference to organizational behavior, it also facilitates (or forces, as needed) opportunities to communicate and to engage in long-term exchanges about competing ideas. Caution in pursuing better training is warranted, because tight fiscal eras are those most prone to cutting opportunities for training that might threaten service-specific habits for building proficiency. There is also an innate desire to ignore the shortfalls that joint training expresses. The fact that there are over four hundred jointly trained military specialties, though, means that in some ways the U.S. defense establishment turned a corner toward jointness in the 1990s from which there is no return, and this is a good thing.

A better way to derive joint doctrine is by closely watching the services as they do their utmost to achieve what they think they do best. Then, an exogenous broker can quantify and weigh on a common scale the capabilities available to the services when they pursue their own specialized doctrines to the utmost extent. For a given security problem, the best option or palette of options would emerge. Joint doctrine would move away from the philosophically unattainable 'best' way to do something. It would instead adjudicate among the alternatives available to arrive at an optimized solution for a given problem. This approach would give voice to the services' most radical, highest-payoff ideas in each decision-situation rather than quashing them under a heavy slab of unanimity. It might, in the lofty vision of Hans Morgenthau, "bring order and meaning to a mass of phenomena which without it would remain disconnected and unintelligible," which is a fair description of most 'joint doctrine' and, all too often, 'joint' command-and-control structures that have not been tested and refined by combat.[991]

A Two-Level Problem
Jointness, as with strategy, merits discussions on two different planes. There is a bifurcated conversation about 'strategy,' for which common usage implies charting a path to victory. There

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[991] Hans J. Morgenthau, *Politics Among Nations: The Struggle for Power and Peace* 5th ed. (New York: Alfred A. Knopf, 1973), 3.

is an undeniable human desire to block off an event, a series of events, or an era, and assign a definitive description to the segment of time. If it involved military action, the description must include 'victory' or 'defeat.' Military and political leaders both—since war and politics are inextricably intertwined—must articulate their strategies, and to most audiences, even some who might be expected to know better, these will connect an existing situation to one that is 'victorious,' or closer to victory than is the present state of affairs. Though "[t]ime may appear to be a neutral dimension to war and strategy…it is equally usable by all belligerents, [so] its meaning will tend to differ for each."[992] All the victorious tactical engagements that the U.S. military waged in the Vietnam conflict gave way to a strategic loss, primarily because the North Vietnamese and Viet Cong used the ten years of time more effectively.

There emerges a second level of strategy, one that exists at a more esoteric level. Victory—and the finality it implies—is not a primary pursuit within this sphere. This side of the study of strategy allows a sublime indeterminateness. Carl von Clausewitz wrote, "In war the result is never final."[993] Everett Dolman echoed this in saying that a true strategist "seeks instead of *culmination* a favorable *continuation* of events."[994] Triumph is anathema to this formulation of strategy, because it demands completion, a final summation of events. The very 'strategy' for which the world clamors, however, is merely a way to bring about these favorable, if fleeting, moments of stability in the march of human affairs.

Both sides of the strategic coin must stay visible if the concept of strategy is to hold practical value and stand up under the weight of rigorous scholarship. While Dolman's

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[992] Colin S. Gray, *Fighting Talk: Forty Maxims on War, Peace, and Strategy* (Westport, CT: Praeger Security International, 2007), 72.
[993] Clausewitz, *On War*, 80.
[994] Dolman, *Pure Strategy: Power and Principle in the Space and Information Age*, 5. Even as Dolman acknowledged the importance of this distinction, he still recognized the importance of divining victory on the battlefield, at least as a preferable alternative to defeat in advancing the interests of a state; ibid., 6.

exhortation that "the first notion the strategist must discard is victory" remains useful for a student of strategy, a successful strategist will never forget that 'victories' nonetheless keep alive the will to fight, the imagination that an effort can succeed, and the morale to fight beyond oneself.[995] In Napoleon's immortal formulation, in battle "the moral is to the physical as three is to one."[996]

So it is with 'jointness;' both its definition and its pursuit in practice matter. Final resolution of the tension between the two is a wicked problem whose solution is as elusive as a search for complete 'victory.' No country with meaningfully differentiated armed services has attained complete jointness, nor can any serious leader of a military service eschew the unique doctrinal stance that imbues his service with its individualistic view. Doctrine evokes specific entailments in each service and defies a universal definition that reaches across multiple audiences, even in a single country. Yet the public notion of unity and striving toward a shared goal remains useful, because often the pendulum of individual-service striving swings too far for battlefield effectiveness to emerge.

A final point is in order about the proposed definition: it will not necessarily be popular with or accepted by a military audience because it does not match up with the self-conception of jointness that group holds. More precisely, that group is split about what it believes jointness *is*, though less so over what *should cause it*, as the survey results reported in Figure 7 below reflect.[997] Despite the lack of consensus, respondents tend to have passionate views about which elements do and do not belong in the definition.[998]

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[995] Ibid.

[996] See, *inter alia*, Peter J. Dean, "Napoleon as a Military Commander: The Limitations of Genius," accessed 23 February 2014, http://www.napoleon-series.org/research/napoleon/c_genius.html.

[997] Respondents answered three questions, two of which are reported here: The 'essence' question read, "'Jointness' in the U.S. military SHOULD consist primarily of (choose one): A) inter-operability of equipment on the battlefield (compatible radios, computers, situational-awareness systems, e.g.); B) unified command and control under a properly appointed joint commander, or C) efficiency in acquisition and logistics by increased economy of scale?"
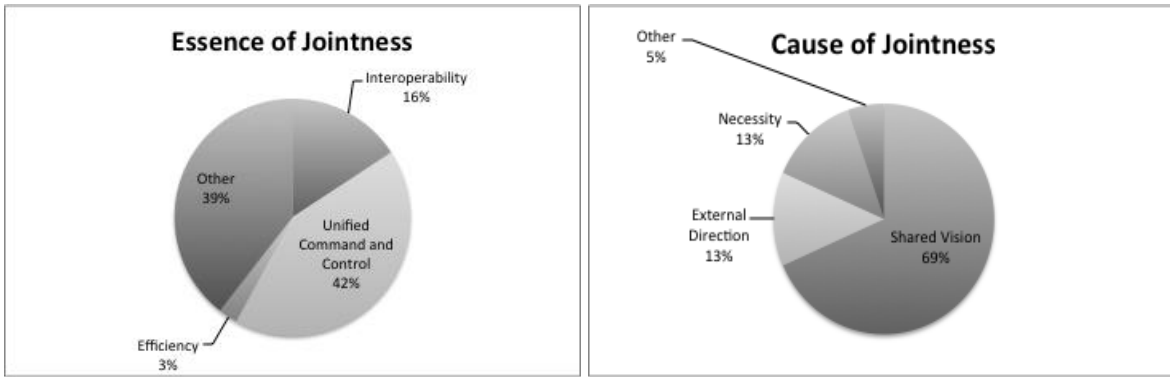
Figure 7. Selected Survey Results

IV. Conclusion

Using observations gleaned from a theoretical examination of the case studies, this chapter has identified germane aspects of jointness that present themselves from general and military-specific theories. These reduce into four key dimensions, which may be used to study inter-service cooperation. They offer a descriptive framework with the chance for a possibility of predictive analysis as the data set of case-study analysis expands. This chapter has also offered a normative, prescriptive definition of 'jointness,' finding the existent descriptive definition of common usage to be overbroad for helpful defense decision-making. It offered a justification for the pursuit of an improved definition as well as the development of a pre-theoretical framework for describing and studying joint cooperation.

It seems unlikely, given the incoherent mix of what jointness means to various audiences, that a satisfactory general theory might develop. Part of the incoherence is illustrated by the parameters that describe jointness listed above and by the wide range of values they may reflect. That is not of great concern to the isolated practitioner, though, who through her own familiarity with the situations upon which she engages, will recognize the taxonomic characteristics that

The 'cause' question read, "Who or what should be the primary influencer, driver, or reason for jointness? A) A compelling, shared strategic vision that motivates services to pursue a common goal; B) external direction from the President, Congress, the Department of Defense, or another entity that oversees the defense establishment; or C) the need for greater fiscal or combat efficiency due to constrained resources?" In all cases, 'other' answers reflect a respondent who chose more than one multiple-choice answer.

[998] A survey of fifty-four people interviewed for this project, administered after all interviews had been completed, yielded a response rate of sixty-nine percent.

make more specialized theories useful. For example, one may pursue a theory of joint acquisition—or a theory that works for a specific kind of acquisition—that is distinct from one appropriate for advancing joint operational command and control in a particular conflict. Indeed, the equifinality of jointness is why so many examples of effective cooperation exist despite the number of potential obstacles that special interests and a robust bureaucracy erect in front of it. The trick for the pragmatist—or the heterogeneous engineer, or the service member who *simply wants to get something done*—seems to be recognizing that there are a plethora of ways to be 'joint' and an accompanying large number of ways to effect cooperation.

CHAPTER SEVEN

CONCLUSION: PURSUING JOINTNESS?

Jointness means services specialize and rely on each other. Jointness has been and will be resisted because no commander wants to rely on somebody else for make-or-break support.[999]

General Merrill McPeak, U.S. Air Force
September 1994

Turning and turning in the widening gyre
The falcon cannot hear the falconer;
Things fall apart; the centre cannot hold;
Mere anarchy is loosed upon the world,
The blood-dimmed tide is loosed, and everywhere
The ceremony of innocence is drowned;
The best lack all conviction, while the worst
Are full of passionate intensity.[1000]

William Butler Yeats
The Second Coming, stanza one
November 1920

I. Introduction

The chapter distills some of the key observations of the preceding case studies into actionable

conclusions for practitioners in the defense establishment. Focusing on the parameters of

jointness outlined in Chapter 6, it offers some first-iteration hypotheses about the prevailing

conditions that must exist in each one to foster joint cooperation. It also includes some predictive

statements about the nature of jointness that are based on theoretical observations common

among the case studies. While the effort to establish an intellectual framework for the study of

jointness is of academic interest, practitioners will glean more utility from a summary of

observations and concrete recommendations.

The structured, but untested, collection of relevant parameters of joint potential that

informed the pre-theory offered in Chapter 6 is based on three case studies. Given the small

sample, more examples are required to ascend the rungs of descriptive effort toward the realm of

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[999] Merrill A. McPeak. "Presentation to the Commission on Roles and Missions of the Armed Forces." Washington DC: U.S. Air Force, 1994, slide 205.

[1000] William Butler Yeats, *Michael Robartes and the Dancer* 1970 Irish University Press ed. (Churchtown, Dundrum, Ireland: Chuala Press, 1920).

theory and the predictive promise that level of refinement brings. Drawing preliminary conclusions and applying them to additional cases can be of use, though, as it creates falsifiable hypotheses and illustrates how this additional testing might proceed. At the same time, it allows the reader to determine whether the definition and dimensions of the pre-theory offered are consistent and robust, even if exact values of those parameters deemed most likely to empower joint cooperation are subject to extended debate.

In selecting a research method for this study, the work left itself open to the possibility of equifinality in trying to explain jointness. In other words, there can be more than one way to achieve a military outcome that enjoys consensus description as a joint action. While this study has identified many competing factors and structures that can impede or foster jointness, there do seem to be a few factors that must appear *ex ante* the emergence of jointness. The first aim of this chapter is to set down the most evident of those.

To apply some of the preliminary conclusions about joint initiatives to an emerging opportunity for joint cooperation, the second part of this chapter discusses Air-Sea Battle, an operational concept being developed as a nominally all-service initiative in the Pentagon. The stress on 'nominal' is well warranted; as the name suggests, the concept is primarily the work of the Air Force and Navy. The Army and the Marines have token participation in the effort, but they have also stood up a competing office to advance what is called the Strategic Landpower Initiative. Personnel working on this idea are ensconced adjacent to the Chief of Staff of the Army's personal think tank, which occupies a spacious office building in Arlington, Virginia. The apparent competitive struggle among the services embodied in these two endeavors is an apt illustration of the continuing difficulties the pursuit of jointness entails.

II. Preliminary Conclusions About Jointness
*A. 'Useful' jointness improves command-and-control methods, interoperability, **or** efficiency*

This conclusion arises from the study's effort to create a more constrained definition of 'jointness' that did not allow obfuscation or semantic free riding. However, a real plurality of meanings among the practitioners of jointness demands that the term maintain a flexible definition with respect to its essence. There are in fact at least two sides of jointness: efficiency and cost savings vie with better effectiveness on the battlefield in the minds of those who use the vocabulary of joint cooperation. This characterization extends across the endogenous, meso-organizational, and exogenous strata investigated. Just like some members of Congress, certain members of the military feel strongly that interoperability and economies of scale are the only realistic contributions that jointness can make. Others, in both groups, believe in the possibility of unified command-and-control measures that will reduce fratricide and inefficiency in combat while providing a broader range of military effects for national security.[1001] Their disagreement prohibits a more-refined definition, but we may conclude with some confidence that the type of jointness sought varies in difficulty across a spectrum. It is *much* more difficult to get services to acquiesce on matters of strategic preference and theory of victory—typically the sticking points that block agreement over command-and-control methods—than it is to agree to purchase common or compatible equipment.

Despite the vexing degree of difficulty involved in achieving the most idealistic forms of jointness, a reappearing theme encountered in this work is that combat quickly removes barriers to joint cooperation. If basic interoperability thresholds permit safe integration, services will rely

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[1001] Forty-two percent of those in the defense establishment interviewed for this work felt that "Jointness in the U.S. military *should* consist of "unified command and control under a properly appointed joint commander," while sixteen percent believed it consists of "inter-operability of equipment on the battlefield." Of the remainder, three percent believed it to be "efficiency in acquisition and logistics from increased economies of scale," and thirty-nine percent chose more than one of the above choices. Of fifty-five interviewees, thirty-eight responded to the follow-up survey; Birch, "Joint Cooperation Survey."

on the assistance their counterparts can provide regardless of pre-conflict ideology. To be

flippant, everyone is a doctrinal agnostic in a foxhole. A more serious implication of this trend is

that better jointness—and better assessments of what joint cooperation requires—would come

from combined-service training that closely approximates combat conditions. For a variety of

reasons, such conditions are impossible to attain and difficult to simulate with anything

approaching perfect realism. However, the defense establishment must do all it can to resist

internal barriers to achieving an ideal. As Monte Cannon writes, "joint training venues and

curricula are steps in the right direction" toward the construction of jointness he advocates.[1002]

Since true competition and objective assessment of available joint options can improve the

effectiveness and efficiency of military forces, accounts of war games that place arbitrary

limitations on the mock enemy force to persuade "desired" outcomes are particularly

troubling.[1003]

The case studies examined for this dissertation, as well as the language of international

relations, organization theory, and organizational psychology, all hearken back to a common idea

about jointness—it is a complex construct that exists mostly in the eye of the beholder. Jointness

can be coincidental and unspoken; intentional and borne out of a desire to help; and it can be

induced by implicit, explicit, or perceived organizational threats. Where one person sees

jointness, another may vociferously deny its existence. This characterization of joint action

suggests two competing ontological views. Pessimistically, chance or nefarious purposes are so

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[1002] Cannon, "Cleaning Up the Joint," 299.

[1003] Paul K. Van Riper (Lieutenant General (ret.), USMC; former Commanding General, Marine Corps Combat Development Command), personal interview with the author, 9 December 2013. See also "U.S. Marine Corps History Division Biography of Lieutenant General Paul K. Van Riper," Marine Corps University, accessed 25 November 2013, https://www.mcu.usmc.mil/historydivision/Pages/Who's%20Who/V-X/van_riper_pk.aspx. Lieutenant General Van Riper is well-known for his unconventional tactics as the leader of 'red' forces in the *Millennium Challenge 02* war game, which he quit in protest after "Pentagon officials who managed the game simply disregarded or overruled the [simulated opposition] militias' most devastating moves;" see Fred Kaplan, "War-Gamed," *Slate*, 28 March 2003. http://www.slate.com/articles/news_and_politics/war_stories/2003/03/wargamed.single.html.

often at work in thwarting inter-service cooperation that even if she so desires, a leader cannot

conjure jointness *ex nihilo*. From an optimist's view, there are so many ways to foster jointness

that policy-makers and military innovators who want to encourage joint cooperation have a wide

tool kit from which to choose in facilitating their vision. The reality that competition is an

integral part of jointness, both in its practice as well as debates about its meaning, leads to a

corollary that follows from an attempt to define its essence.

Corollary: useful jointness does not assume common understanding, alignment of interests, or automatic cooperation

The published claim that "[t]he Armed Forces of the United States have embraced 'jointness' as

their fundamental organizing construct at all echelons" is a half-truth at best.[1004] While this may

be the stated goal of legislation, a mandate of DoD policy, and a hope of the Joint Staff, reality is

more reflected by Lieutenant General Deptula's description: "[A]mong our four services, a

specialized array of capabilities is provided through service or functional components to a joint

force commander whose job it is to assemble a plan from this 'menu' of capabilities, applying

the most appropriate ones for the contingency at hand."[1005] Far from being organized to fight

together, an accurate perception is that the services organize, train, and equip forces in the way

they best *individually* see fit. In combat, the onus then falls on a joint force commander to

assemble an acceptable security solution from the palette of options presented, all in the midst of

a crisis-planning environment. In the realm of acquisition, exogenous authority mandates

jointness formally; the services use sincere effort (or avoidance mechanisms) to comply with the

intended outcome (or to shirk the intent and comply in appearance only). This may be an

unpopular truth to voice openly, but unless it is acknowledged, the plans of commanders will be

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[1004] "Joint Publication 1: Doctrine for the Armed Forces of the United States," I-2.

[1005] David A. Deptula (Lieutenant General (ret.), USAF; former Director, Combined Air Operations Center (2001), Operation Enduring Freedom; former Air Force Deputy Chief of Staff (2006-2010) for Intelligence, Surveillance and Reconnaissance), e-mail to Air Force Association members, 5 June 2014.

continually disappointed because their expectations do not match the defense establishment's extant structural realities.

Another myth that merits debunking is the idea that the services will get out of each other's way when one branch of the military may be best suited for a mission. It seems more accurate to say that the services want "a fair and stable share of budgets, missions, and commands for each of them," and that they will practice "cartelization" to ensure that civilian masters are not able to keep them from this goal.[1006] Deptula believes that jointness "does not mean four separate services deploy to a fight and simply align under a single commander. Nor does jointness mean everybody necessarily gets an equal share of the action. Jointness is not homogeneity—it is not 'going along to get along.'"[1007] However, his picture in this respect counters the realists' portrayal of Pentagon politics. Sun-Tzu wrote of the many "estimates" that should presage a military expedition, opining that "[w]ith many calculations, one can win; with few one cannot."[1008] His advice assumes accurate measurements. It is difficult to succeed in an environment where one does not understand the operative terrain and relationships that characterize inter-service politics. Jointness would be more successful (and less disappointing) if more practitioners retained an accurate awareness of the political restraints placed on it and did not willfully perpetuate ignorance by repeating comforting platitudes.

*Corollary: useful jointness does not provide a **best** way to win all wars or universal doctrine*
The competitive nature that inheres in the military services should be acknowledged, not stifled behind a wall of denial.[1009] Military advice to defense principals should include the operative

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theory of victory upon which it rests. For a given conflict, military services and the planners they send to support a joint effort will arrive equipped with some theory of victory—perhaps explicit, perhaps tacit—of how their expertise can help 'win' the conflict at hand.[1010] There is no reason to keep this a secret—it may well be the best idea available. But if it does not answer the problem at hand or its implementation beggars common sense, a competing theory merits a chance to persuade decision makers.

One may view the practice of using services to organize, train, and equip fielded forces as a stroke of genius or a submission to harsh reality. Either one believes each armed service does best in its respective area of expertise, or else he thinks that a fundamental restructuring of the military establishment is impossible. Barring the cataclysmic event that could drive such a change, this study recognizes that to be joint acknowledges the existence of separate services, and that those services have an imperative to best understand how to exploit the advantages of their particular domain- and specialty-specific operations.[1011] What it insists on adding is acknowledgment of the deep-rooted and often contentious competitive spirit that emerges among the services as a result. Deptula phrased it succinctly: "Articulating the virtues and values of your

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concurrence and unanimity tend to mask the sources of conflict from exogenous decision makers, sometimes stifling innovation and operational thinking. While avoidance and resolution are acceptable in some cases and are frequently necessary timesaving devices for effective defense operations, the exogenous strata of the defense establishment must selectively insert itself to ensure that enough plurality remains intact. Absent this necessary oversight, defense decisions may become moribund as differences are papered over or some viable options never see the light of day outside the Pentagon.

[1010] Desert Storm provides a ready and recent example. The Air Force posited a vociferous argument that carefully crafted strikes using stealth and precision could throw into confusion Saddam Hussein's regime, making the ground fight in Kuwait easier and perhaps even hastening the dictator's departure. The Army and Marines believed that closing with and destroying the forces of the Iraqi Army was required to eject the Iraqi presence in Kuwait.

[1011] The conclusion that the services are not prone to voluntary cooperation without significant outside motivation seems to be backed by both ample evidence as well as a preponderance of social science theory. If bureaucratic barriers in place are so massive as to threaten the delivery of national security, prowess on the battlefield, or any other common-good commodity that one could reasonably expect to derive from investing in a military force, a military paradigm-shifting "crisis" or "pronounced professional insecurity" that leads to the destructive-constructive cycle of paradigm shift could result; see Thomas S. Kuhn, *The Structure of Scientific Revolutions* 2d ed. (Chicago: University of Chicago Press, 1970), 66-68. Given the recent record of the U.S. armed forces, however, such a crisis does not appear imminent.

service is being joint," though he himself might not top a list of defense-establishment figures known best for embracing jointness.[1012]

Sapolsky, Gholz, and Talmadge offered a nuanced understanding of the basic philosophical question that underpins the question of joint cooperation. In describing the modern U.S. defense establishment as consisting of two centers of power, the civilian DoD and the military Joint Staff, they made three cogent observations: 1) there is an incessant call for more centralization when there are budget or military crises; 2) playing DoD civilians against the military hierarchies leads to collusion among the military services, which produces politically passable but militarily mediocre short-term solutions; and 3) indecision about the best way to solve security problems is acceptable, because the solutions to emerging and future security problems are by definition unknown entities—a planner's desire to seize upon a "best" course of action for the sake of efficiency risks failure at the hands of an enemy who finds a way around that course of action.[1013] They concluded their work on defense politics with a call for continued and spirited multi-perspective debate.

Rear Admiral J.C. Wylie acknowledged the fundamental rifts across the services over doctrine, but likewise welcomed the plurality of opinions it provided:

The basic problem is why they do not agree. Why does the soldier think like a soldier, the sailor like a sailor, and the Airman like neither of these but like an Airman? Asking why they do not agree is quite a different matter from asserting that they should agree. On the contrary, these differences of judgment, these clashes of ideas, these almost constant pullings and haulings among the services, are the greatest source of military strength that the nation has. We do differ, within and among the services, and may Heaven help us if we ever enter into a period of prevailing sweetness and light and unanimity. Nothing would be more dangerous to our nation than the comfortable and placid acceptance of a single idea, a single and exclusively dominant military pattern of thought. The political parallel is almost too obvious to mention.[1014]

[1012] Deptula e-mail #3, 5 June 2014.
[1013] See Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 163-64.
[1014] Wylie, *Military Strategy*, 150.

Given the march toward unification and the quelling of service-specific advocacy in the years after he wrote, it is worth spelling out now what Wylie thought was obvious then. The totalitarianism of universal doctrine threatens to suffocate the good ideas that arise in an environment of competing doctrines, and in turn threatens the nation's military potency. The services are positioned to continue debating and to avoid the intellectual tyranny of a universal doctrine. As Eugene Zuckert wrote, "no reason for separate services seems more important than the freedom to apply many years of thinking and experience to operational concepts and weapon requirements," which to him constitute the "big picture of service roles and missions."[1015]

An appreciation of the importance of independent thinking must be accompanied by caution in divining meaning. To wit, 'jointness' often becomes the word behind which political interests rally when they are really looking for increased centralization, synonymous with consolidating offices or eliminating a service's capability to do a certain mission. Among the limited resources of the real world, finding efficiencies is a necessity, but today's efficiency can be tomorrow's loss of capability against an unforeseen threat. For this reason, the advocacy for a degree of mission duplication and doctrinal uncertainty among the services that Sapolsky et al. advocated is well warranted.[1016] There are expenses associated with this pluralistic pursuit of national defense, to be sure, and the degree to which chasing it is feasible reflects the priorities and fiscal health of the nation. To completely eliminate it, though, is to invite collusion among special interests and a sure loss of capability against foes not yet identified.

[1015] Eugene M. Zuckert, "The Service Secretary: Has He a Useful Role?," *Foreign Affairs* 44, no. 3 (1966): 477.
[1016] "It seems strange to hail confusion and indecision, but we must… Wise leaders…will search out other planners and analysts for confirmation or, more importantly, for dissent;" Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 164.

A curious counterpoint to the theme of pluralistic striving advocated by many authors is the belief that a single, unifying vision can and will emerge within the defense establishment.[1017, 1018] An overwhelming trend this study uncovered is a desire expressed by military leaders for coherent, singular strategic thought leadership, with relatively fewer voicing a need to welcome and foster enduring competition.[1019, 1020] It is not just within the defense establishment that wistful thinking for the clear and present dangers of days past resonate. Respected defense analyst Andrew Krepinevich referred to Air-Sea Battle as an example of an operational concept that would enable Congress, "the military, [and] the secretary of defense…to make some really good decisions."[1021] He went on to decry the "fuzzy concepts" of modern debate as unable to provide "intellectual rigor," "winners and losers," and "shifts in capabilities that you need in order to be able to deflect these challenges or at least to realize that you can't cope with them."[1022] Krepinevich's advocacy of such 'clear' operational concepts should be weighed in the

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[1017] Among those interviewed for this work, General Jumper was probably the most forceful and articulate holder of such an opinion. He wrote, "What would really drive jointness is the development of Joint Concepts of Operation [CONOPS] that would analyze how we plan to engage jointly before we run out and start buying the equipment we will use to fight with. A true CONOPS would guide interoperability, C2 [command and control], and acquisition. The JROC [Joint Requirements Oversight Council] should be reformed to produce CONOPS instead of requirements… The glue that we don't have, and really need, is the Joint CONOPS that forces the services, along with each COCOM, to develop a plan for how they plan to fight, or carry out the strategic direction. They would be forced to answer questions about shared responsibility, shared capability, efficient joint logistics, etc.;" John P. Jumper (General (ret.), USAF; former Chief of Staff (2001-2005), U.S. Air Force), e-mail exchange with the author, 23 June 2014.

[1018] Sixty-nine percent of those surveyed identified a "compelling, shared strategic vision" as the primary cause that should drive jointness. An additional five percent selected it as one of multiple reasons; Birch, "Joint Cooperation Survey."

[1019] Several interviewees for this study articulated the opinion that a unifying strategic vision would emerge from a joint commander strong enough to gain unity of command and quell inter-service competition during a conflict; Deptula interview, 5 December 2013; Jumper interview, 16 December 2013; Kem interview, 20 May 2014; Steven L. Kwast (Major General, USAF; Commander, Curtis E. LeMay Center for Doctrine Development and Vice Commander, Air University), personal interview with the author, 17 December 2013; Ralph Peters (Lieutenant Colonel (ret.), U.S. Army), telephonic interview with the author, 10 December 2013; Van Riper interview, 9 December 2013.

[1020] A competing viewpoint is summarized in the words of David Johnson, who argued that there is no "joint theory of victory" that competes with existing theories debated for land, sea, and air domains and that, therefore, there could be no dominant corresponding joint doctrine; Johnson interview, 24 February 2014.

[1021] U.S. Senate, Committee on Armed Services, *Sen. Carl Levin Holds a Hearing on the Defense Secretary's 2010 Budget Recommendations*, 111th Congress, 1st session, 30 April 2009.

[1022] Ibid.

balance against the fact that his Center for Strategic and Budgetary Assessments (CSBA) had, at this writing, produced a report that is one of the most widely circulated interpretations of the Air-Sea Battle concept outside the military's own classified descriptions.[1023] There is a risk of self-delusion in viewing a think tank's apparently dispassionate advocacy for sound operational concepts without suspicion. Praise must be weighed against the political clout that accrues to those who succeed in becoming the interpreters-in-chief of defense policy to outside organizations, especially the defense-sector firms who will bid to build new systems that fulfill the vision of the new organizing construct. Contracts will flow to those who can best articulate and align their messaging with the new vectors the Defense Department pursues. Candor suffers because of the resulting conflict of interest.

Even Henry Kissinger, that wizened practitioner of *realpolitik*, exhibited this form of unitary optimism in looking to the leadership of a single military leader, specifically the Chairman of the Joint Chiefs of Staff, who would participate in the formulation of national 'strategic doctrine' along with the National Security Council.[1024] Such hopes are best described as the "strategic monism" against which Samuel Huntington cautioned.[1025] Whether in operations or strategy, pretending there is only one best path to success is a tendency with which the defense establishment must continually struggle.[1026] J.C. Wylie cautioned, "[P]lanning for certitude is the

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[1023] Jan Van Tol et al., *Airsea Battle: A Point-of-Departure Operational Concept* (Washington DC: Center for Strategic and Budgetary Assessments, 2010), ix-xi.

[1024] Kissinger, *Nuclear Weapons and Foreign Policy*, 237-38. Kissinger believed that strategic doctrine "enables society to deal with most problems as a matter of routine and reserves *creative* thought for unusual or unexpected situations," ibid., 403-04.

[1025] Huntington, *The Common Defense: Strategic Programs in National Politics*, 264.

[1026] Johnson's prescription to avoid strategic stasis was to confront multiple simulated security crises with planning and exercises: "I think the ISCs, the Defense Planning Scenarios, give you problems that are kind of real-world but also are not present." He went on to describe two different scenarios that involved different combinations of likely combat intensity, threat, geography, and regional participants—a challenging and varied spectrum of military planning problems. "How do I solve those problems?" Johnson interview, 24 February 2014.

greatest of all military mistakes."[1027] In confronting itself with multiple puzzles to solve, the

defense establishment moves away from the dangers of monism, but rapidly confronts the

problem of resource constraint, which introduces the underlying cause of the next conclusion.

B. Jointness does not exist as an inter-service state of nature[1028]
Normal inter-service dynamics will not result in joint cooperation. Each of the case-study

examples of inter-service cooperative behavior demonstrated a requirement for a confluence of

forces, acting above and beyond the normal inter-service bureaucratic exchanges, to come

together to effect significant joint behavior, a joint outcome, or an increase in joint capability.

The internal structure and processes of the defense establishment provide the most obvious

explanation for why this is so. The defense enterprise is a layered, multi-component bureaucracy.

At its endogenous level are the services. They are responsible for organizing, training, and

equipping forces, generally specialized to have the most influence within a specific fighting

domain, to meet the requirements of commanders who must in accordance with national

guidance to exercise the military component of the nation's power. They are equipped to be

autonomous, and they believe—probably rightly—that they are best equipped to conduct warfare

in their domains of specialization. Therefore, they fight, in the way that all professions do, to

advance their particular method of employing military power as the preeminent means of

achieving victory in any conflict.

It is the services, however, spurred by institutional preferences and budgetary pressures to

vie for their own individual agendas, from which the meso-organizational level draws its

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[1027] Wylie, *Military Strategy*, 72.
[1028] Given their remarkable autonomy and the agency problems others have described, it seems most apt to describe the services as existing in a constrained Hobbesian environment, both with regard to joint-force commanders (meso-organizational) as well as their would-be exogenous masters like the DoD, the executive, and Congress. Inter-service rivalry is as potent as one can imagine, just as long as one party does not drive another to seek relief outside the Pentagon. For Hobbes' description of the "state of nature" as "the ungoverned passions of individuals" which serve as "an analogue for the state of anarchy to which civil society is too easily returned," see, e.g., Patricia Springborg, "General Introduction," in *The Cambridge Companion to Hobbes's Leviathan* (Cambridge: Cambridge University Press), 9.

leadership and talent. The commanders to whom the services provide forces are labeled 'joint' commanders, but they pass through the ranks of individual services to attain that level. While Goldwater-Nichols has certainly encouraged many more than would have in past eras to pursue 'joint' assignments, the preponderance of influence (enculturation, promotion, education, etc.) on each potential commander still lies with his or her individual service.

Not only the specified combatant commanders, but each and every staff officer in a joint headquarters, arrives imbued with a view of the natural order of things, and that view has been influenced a great deal by the service that officer calls 'home.' The concept of an ideal joint officer—someone able to set aside a career's worth of service loyalty, subconscious prejudices, and the knowledge that the next promotion depends on decisions made by an individual service's corporate process—is a pleasant idea, but one unlikely to be replicated in all but a few individuals who may or may not then subsequently attain high rank. A more realistic outcome of joint service is that a few perceptions of colleagues in other services will be favorably changed (or negative stereotypes calcified) with advocacy for the service in which one holds position and rank proceeding apace. The journey to a truly joint viewpoint happens only with time but usually begins late in a career; only a small percentage of gifted individuals will be able to navigate the difficult straits of articulating positions of compromise without alienating themselves from the service that provides them succor throughout a career.

The possibility of changing service tendencies and preferences toward more jointness over time seems unlikely. The theory of adaptively rational systems holds that if a decision rule used in the past has led to a preferred state for the organization, that decision rule is more likely to be used in the future.[1029] Viewed from this perspective, the Air Force's very existence is the result of prevailing in an institutional argument that air power should be distinct from land power and

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[1029] Cyert and March, *A Behavioral Theory of the Firm*, 117-18.

controlled by individuals not beholden to the will of a ground commander. The organization

therefore reinforces decision rules that promote independence. Similarly, the extreme dominance

by the Air Force of the DoD budget during the dawning nuclear age witnessed the institution

reach a state that was favorable by most measures of bureaucratic success. Because this preferred

state occurred in the context of debates about strategic air power, from this theoretical lens one

would expect the Air Force to continue to emphasize its contribution to strategic national

security aims over those of a tactical nature. All of the other services have similarly deep-seated

views that have been reinforced over even longer periods of time.

Corollary: All joint initiatives and successes will fade away over time
Though each of the case-study examples in this work demonstrated some degree of inter-service

cooperative behavior, the ending demonstrated or suggested that the cooperation was short-lived.

The same dynamics that make cooperation difficult in the first place remain fixed, eroding the

engineered jointness quickly or over a long time. Two illustrative examples come from the

aftermath of AirLand Battle. With respect to the theory-of-victory and command-and-control

facets of jointness, the doctrine envisioned a big enough challenge to U.S. combat capability that

it accommodated an acceptable inter-service compromise in both areas. When these concepts

were employed on battlefields in Kuwait and Iraq, in a conflict much smaller than the original

concept envisioned, the temptation to negate the compromises proved overwhelming. In the

aftermath, Deptula's memo characterizing AirLand Battle as doctrinal near-heresy and Scales'

unilateral history of the Army's victory demonstrate how both services snapped back to their pre-

existing parochial interests.[1030]

AirLand Battle also provided an example from the fiscal realm that suggests jointness is

the first victim of peacetime budget constraints. The halcyon days of large Reagan

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[1030] ; Scales, *Certain Victory: The U.S. Army in the Gulf War*.

Administration defense budgets during the AirLand Battled years allowed regular liaison of Army and Air Force officers to each other's budget shops. The days of routine Army-Air Force coordination are now a distant memory from the 1980s, though. According to one action officer in what is known informally in the Pentagon as the Air Force's "engine room," the planning organization in charge of making service budget recommendations, there is very little joint interaction going on at the action-officer level and no formal exchange of liaisons.[1031] The reasons for the demise of each joint endeavor will differ in details, but all will relate to service preferences in general. In short, the characteristics that define and portend bureaucratic inertia in other organizations assuredly apply to the military establishment, and they will be overcome only with exceptional circumstances or efforts.

C. Exogenous influences are best equipped to drive cooperative joint behavior
Put simply, it seems that fear of losing on the battlefield or a shaming before Congress are the only two things that can coerce the military services to cooperate with each other. Theoretical interpretations rooted in a structural-realist approach to international relations underpin an explanation for this trend.[1032] This study seeks neither to disprove or justify the validity of theories so grounded, but the preponderance of observed forces affecting jointness in this studies' cases were exogenous. All observed instances of successful joint cooperation required the attention of organizations existing at levels or hierarchy above the military services. The suggestion is that good intentions alone will not yield jointness; deliberate partnership with higher echelons is a necessity.[1033]

[1031] Babcock interview, 21 March 2014.

[1032] A similar basis surfaces in Posen's explanation for military innovation. Recall his posited causes of and barriers to innovation: "organizations innovate when they fail…when they are pressured from without…[and] when they wish to expand." "Militaries oppose innovation, but we see some remarkable innovations… Civilians do affect military doctrine. Their intervention is often responsible for the level of innovation and integration achieved in a military doctrine;" see Posen, *The Sources of Military Doctrine*, 47 and 227.

[1033] If the services pursue the coalescence required to bring a joint initiative to fruition (as in seeking congressional support for the JPATS), it seems to counter Huntington's idea of objective military control. Such control lets

Wartime crises drive military organizations to pursue helping behaviors over time, but the cooperation attained is less than ideal. This is an unsurprising, intuitive conclusion, backed by Svedin's empirical research showing that "[a] majority of the interactions between organizations in crises, both in decision-making situations and over the course of a crisis, are conflictual. That is, organizations interacting in crises tend to disagree, fight, and engage in other competitive behavior to a greater extent than they agree, are honest toward each other, or help each other."[1034] While such fighting paradoxically does build trust—probably via a mechanism of repeated engagement—among the organizations, the quality and endurance of joint initiatives suffer, both because the urgency of combat does not allow a great deal of intellectual rigor and because the conditions under which jointness is pursued are exhausting and subject to even greater ongoing change than are routine inter-service interactions.

Corollary: Air support to ground forces is an area of perennial weakness; therefore, it merits recurring exogenous attention and remediation

A collateral conclusion comes from this study's observation of the implementation and demise of AirLand Battle as well as background research for one of the key observations of the Iraq-Afghanistan close-support chapter. On the basis of a long history of inter-service angst in peacetime and false starts in combat, it is apparent that Army-Air Force cooperation on CAS, ISR, and other disciplines required for air-ground integration are an area of chronic concern. Absent the involvement of a third-party exogenous forcing function (i.e., congressional attention) or the threat of failure in combat, the two services have a history of letting the command-and-control structures, resources, and training for passably effective mutual support languish when combat is absent and then fighting about them when armed conflict inevitably reappears. An

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military organizations pursue defense matters according to priorities that they determine internally. As a stipulation for this freedom, a social contract levies a requirement that military organizations will not politicize themselves by reaching out for influence within the legitimate power-holding organizations like the executive and congressional branches that exert objective control over them.

[1034] Svedin, *Organizational Cooperation in Crises*, 125.

interested Secretary of Defense or congressional caucus may want to take note of this and provide the 'master plan' that the services have managed to eschew while left to their own devices on the matter. Repeated combat successes that follow initial failures suggest that the services know instinctively what helpful jointness should look like, yet refuse to pursue it absent the threat of exposure to outside scrutiny. The issue thus merits continual peacetime scrutiny, not simply that which follows poor combat performances. Unless someone holds the services' collective feet to a fire of collaboration, they too quickly and comprehensively part ways with respect to air support.

D. Strong leadership is essential to successful joint initiatives

The joint initiatives examined in this work proved to be, in part, efforts to construct stable systems from a wide variety of components. It helps to have strong leaders to act as heterogeneous engineers in pursuing jointness. Theoretical constructs like public-goods theory, organization theory, theory of professions, and some elements of military-innovation theory give an understanding of why it is difficult to attain joint cooperation and lead to the first conclusion of this chapter. Consideration of this myriad of forces, and the wonder that anyone might be able to tame them in creating "self-sustaining networks that are…able to resist dissociation," suggests a reason why a singular leader or series of leaders appear in all of the successful case-study examples of joint cooperation.[1035] The strong leader with a commensurately forceful personality must initiate movement toward partnership; this was evident in the leadership of General Starry with respect to AirLand Battle, it was present in a series of leaders in the Air Force with respect to the JPATS, and it flickered in and out of view in the case of OEF-OIF air-ground cooperation.

[1035] Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," 114. Strictly speaking, in Law's vocabulary of network coalescence, he asserts that "the social should not be privileged;" see ibid., 113. Where jointness is primarily a social, not technological, construct, there is a case for dropping the qualifying statement about social influence if one extends the discussion to jointness.

The case studies suggest that leaders who would drive jointness must be able to conduct the following activities, often simultaneously: 1) articulate a common vision or strategy; 2) engage multiple levels of the defense bureaucracy and find shared interests among them; 3) build coalitions that adopt and advance the central idea; 4) remain in office sufficiently long to realize the attainment of a goal (or impart the vision to a successor); 5) engage in argument and debate to spur dialogue without isolating potential partners and supporters; and 6) do all of the above with sufficient humility and willingness to compromise that personal and service preferences do not preclude cooperation. Individuals able to do all of these things must further be competent and well respected in their fields; they need to accumulate the political capital they will expend during the process.

Finding an individual with all those characteristics appears daunting, yet they did appear in the case studies. Illustrating from the AirLand Battle discussion, General DePuy saw a need to change the Army dramatically after its experience in Vietnam; he was also able to pass on his vision to General Starry, who adopted much of it as his own. Generals Meyer, Gabriel, and Wickham, perhaps motivated by individual friendships, yielded their personal as well as service interests to seek compromise and continued cooperation. To the requirement for humility, add bravery. A leader pushing for jointness cannot be deterred by what appear to be mistakes. DePuy took as much internal Army criticism as one might expect in his TRADOC position, but his bold moves opened channels that kept doctrinal development and inter-service dialogue going.

Using the framework from Chapter 6 as a point of reference, the 'Leadership' parameter of jointness is one that underlies the other three. Sans leadership, there is no causal influence, no one available to identify joint potential, and no agent who acts to make multi-strata interests coalesce. The role of leaders as indispensable integrators appears over and again in the case-

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study histories. The singular strength of this parameter helps explain why some personalities can be effective even when they do not hold offices at the top of the bureaucratic structure.[1036] It also partially explains the transience of joint cooperation—the leaders who assemble the needed components invariably move on to new challenges in different areas of the establishment.

E. Joint initiatives succeed when they lead to coalescence of interests across levels of the defense hierarchy
Successful joint endeavors require a chain of coalescence involving the endogenous, meso-organizational, and exogenous levels. There is no determining which level is 'most important,' attaining multi-level agreement is analogous to forging both sides of a coin or clapping with two hands; a failure to involve one echelon portends failure.

The clarity of AirLand Battle's how-to-fight manuals and the tactics derived from the idea unified both the Army and Air Force from the level of the soldier or Airman up to the largest fighting units. The concept provided a way for the Joint Staff and DoD to articulate the nation's premier existential military threat, from which it could then define ends, ways, and means to ameliorate that threat. At the exogenous level, the concept captured the attention and admiration of a sufficient number of members of the executive and legislative branches that it became an accepted reality of the foreign and military-policy environment, even though a Soviet invasion of Europe was not a foregone conclusion. Indeed, nothing like what AirLand Battle envisioned as its central organizing concept even occurred. But the need for its attendant military acquisition made it interesting to Congress, and the coherent 'stick' it offered in the context of foreign policy made it useful to the executive branch, allowing alliances to form that sustained AirLand Battle through its tenure.

[1036] Chiabotti noted that "a spirit of compromise and humility" among action officers who worked on the JPATS over many years was able to keep the cooperative vision of the program intact across a wide array of senior officers who rotated more frequently through Air Training Command. The desire to achieve a successful joint outcome was sufficient to reconcile the program's enduring themes with the "different agenda and…different take on just what it meant to be 'joint'" each senior leader brought to his term in office; Chiabotti e-mail, 6 June 2014.

In the instance of the JPATS trainer, the instructor pilots who were training future military aviators had requirements that could be articulated clearly and met with a common platform, but this in itself would not have driven cooperation had that community not been able to find common interests in Congress, which was looking for ideas to streamline defense acquisition programs and was then especially admiring of anything which could be labeled 'joint.' COIN air power offers the examples of tactical operators who saw the need for improved CAS and ISR capability in the Afghan and Iraqi wars. The sense of urgency they felt carried hard-learned lessons throughout the joint force. Meso-organizational commanders, at least during some parts of the conflict, felt spurred to cooperate lest they fail those they led and the expectations of a judging public. The exogenous influence in this case was spotty and inconsistent, though, as was the joint cooperation.

The idea that multi-level engagement is a necessary condition for success in a cooperative effort is not unique to the military. In analyzing a topic that came up many times researching this investigation, it is clear that a successful effort to force interest groups to coalesce was part of the recipe for gaining passage of the Goldwater-Nichols Act. Anne Marie Getz wrote that a senior staffer, Jim Locher, realized via business theory that "any attempt at reform would have to address the entire organization, no piecemeal approach could be effective."[1037]

Corollary: The idea of jointness retains value throughout the defense establishment
The same structural realities that require multi-strata buy-in to ensure the success of joint cooperation also mean that opportunities exist for a joint advocate, operating at any level, to see an initiative through. Since jointness has cachet everywhere, anyone can use it to an advantage. During times of conflict, the effect is magnified, since the visible presence of crisis tends to elicit

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[1037] See Anne Marie Getz, "Congressional Policy Making: The Goldwater-Nichols Defense Reorganization Act of 1986" (Doctoral Dissertation, Yale University, 1998), 143. In fact, Locher's approach involved triangulation among elements within Congress, the Defense Department, and the greater executive branch, all which contained significant anti-reform factions, not least of whom was the Secretary of Defense himself, Caspar Weinberger.

expectations of cooperation from even the general public, which is otherwise indifferent to military cooperation.[1038] From the case studies, the advocacy of low-ranking tacticians who wanted to see jointness increased with technological tools like the Rover video feed presents itself as a prime example. Pragmatism is the close companion of opportunism, though, so the possibility for abuse exists, as evidenced by the hijacking of 'joint' wartime acquisition processes by service interests.

F. Fighting is helpful in the pursuit of joint cooperation
Organizational crisis cooperation literature provides a helpful, non-intuitive approach for the pursuit of jointness. Trust is a precondition for jointness. Dr. David Johnson said, "I don't think we [the U.S. military services] are joint, personally, and it's not because of redundancy. It's because of an absence of trust."[1039] In a *prima facie* paradox, fighting of a certain kind can aid in building this type of trust. A sense of urgency about a common problem, particularly of the kind inspired by wartime stresses, may best provide this impetus. Although post-Anaconda dialogue between the Army and Air Force began with incendiary intent, it eventually brought two service chiefs together, and left one willing to go on the record that his counterpart, regardless of the other clamoring voices in both services, "was someone we could work with."[1040] Increasing uncertainty about the definition of or effective responses to a crisis increases the likelihood of organizational cooperation, another apparent paradox that explains why both real war and inter-organizational conflict, if exploited with the right intentions, can lead to better cooperation over

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[1038] "First, the public often expects organizations, in a time of threat, to rally around the flag in order to limit the uncertainty about the threat and to maximize the use of resources to meet a common challenge;" see Svedin, *Organizational Cooperation in Crises*, 2. Baker and Oneal summarized a correlation between the use of military force and public interest that resulted in greater presidential support when the U.S. initiated hostilities, attempted to "effect some change in the international or regional geopolitical environment," and the act received both media attention and aggressive promotion by the White House; see Baker and Oneal, "Patriotism or Opinion Leadership? The Nature and Origins of the 'Rally 'Round the Flag Effect'," 678. All characteristics listed apply to the COIN air power observations in OEF and OIF.
[1039] Johnson interview, 24 February 2014.
[1040] General Jumper made the remark about General Shinseki; Jumper interview, 16 December 2013.

time.[1041] If nothing else, they get organizations talking with one another, which is a necessary precursor to any type of helping behavior.

G. The defense establishment has a muddled conception of jointness
A secondary outcome of the case-study investigation was a large collection of interviews and correspondence with a broad sample of people involved in the business of national defense.[1042] Several trends from that line of questioning stand out; the passionately held and competing opinions about the essence of 'jointness' discussed earlier reinforce the diversity of meaning mentioned in Chapter 1. There are likewise some noticeable differences about whether the levels of joint cooperation is about right or too low; fortunately, few believe it to be worryingly high.[1043] Moreover, the ultimate source of jointness is open to wide interpretation and strong debate—implied wishes for enlightened monism contend with sober expectations of ongoing competition and argument.

The most pessimistic descriptions—those who expressed them used jarringly similar language—proposed that jointness, such as it exists in the current national defense establishment, works this way: 1) self-interested advocates for materiel, weapons systems, and programs (which are merely incremental improvements of previous versions) drive military acquisitions; 2) military services decide the tactics, techniques, and procedures they will use to employ these

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[1041] The more uncertain the organizations are about how to define the crisis, or about bow to respond to the crisis, the more likely they are to cooperate. They are more likely to agree in decision-situations and tend, as an overarching strategy, to pursue concurrence seeking across the crisis; see Svedin, *Organizational Cooperation in Crises*, 133.

[1042] The sampled cross-section included active-duty and retired military personnel, those who have studied defense as an academic discipline, historians who specialize in aspects of military cooperation or strategy, and people who have worked for members of the exogenous defense establishment. Several people fall into more than one category. While the goal of this study was not to make a scientific sample of the opinions of this large, diverse group, one of the entailments of the research was an opportunity to ask each of them, absent a preconceived opinion or leading questions, what they thought about the topic of 'jointness,' whether it was worth pursuing as an end in itself, and what the most effective means of pursuit might be.

[1043] Thirty-four percent of respondents agreed that the current level of joint cooperation was "near-optimal," and most of these cited the enduring nature of OEF and OIF that have brought the services into routine contact with one another. Sixty-six percent of respondents replied that jointness was "too little (or almost non-existent)." While no one responded that it was "too much" at present, a handful commented that exogenous actors (Congress, DoD) at times sought a level of jointness that was unrealistic or harmful; Birch, "Joint Cooperation Survey."

acquired entities; 3) the services determine those areas that are most critical for interoperability and make partial, after-the-fact efforts to integrate the entities that they take into areas of conflict; and 4) the services devise concepts of operations and strategy that show how all of the previous steps can defeat an anticipated enemy's aggression. Bleak as these cart-before-the-horse assessments are, opinions of those involved in the defense establishment are relevant to any discussion of jointness, because these are the people who will or will not make the outsized effort it seems to require. Their belief in or cynicism toward the concept is a key predictor of future success in joint endeavors.

Do the differing opinions threaten military effectiveness? Locher, acting in his role to help pass the Goldwater-Nichols Act, determined prior to its passage that the essentially separate status of the services within DoD's organizational structure cause its difficulties in pursuing jointness to mount—he believed that MacArthur's exhortation to "Duty, Honor, Country" he learned at West Point had given way to "Turf, Power, Service" in Pentagon politics.[1044] Asserting that DoD's size and challenges are so great as to keep it from making an effective internal response, he argued for making the change that the U.S. government has evaded or avoided since a need for better inter-service coordination came to light in 1898. Namely, he advocated establishing standing joint task-force headquarters in each regional unified command, to imbue the organization with budgetary authority to buy systems unique to joint operations, and to unify the defense support agencies under a single executive.[1045]

Such moves would constitute a transition to yet a new level of centralization, one that fundamentally gives the joint and 'umbrella' defense organizations power on par with or

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[1044] Locher, *Victory on the Potomac: The Goldwater-Nichols Act Unifies the Pentagon*, 10.
[1045] This quest for a "true General Staff" has remained a central root of the Defense Reform movement, according to one of its central architects and thought leaders, Lind interview, 1 July 2014. Lind does not believe that the Goldwater-Nichols Act changed the defense establishment in ways that further jointness or increase military effectiveness and efficiency.

exceeding that of the individual services.[1046] It mimics the Canadian defense-unification

experiment, but executed on a far grander scale, since the U.S. military spends more than the

next top ten national defense budgets combined.[1047] Locher recognized that such a change would

not likely originate within DoD, and so called on exogenous actors to help it "find that balance

between loyalty to service and devotion to the larger needs of the nation."[1048] *Contra* Locher, this

study prefers the current ambiguity over essence, level, and sources of joint cooperation to the

black-and-white certainty of a centrally planned approach. The latter seems too likely to result in

the inflexibility and blind spots associated with other types of government-led planning.

William McNeill, in his magisterial summary of military innovation over the most recent

millennium, wrote, "In a given time and place, where alternate social structures are in

competition, conscious choice and emotional conviction can make the difference in determining

which pattern will prevail."[1049] He contrasted the market-driven military innovations that led

"private and small-group initiatives and self-interest to play a quite exceptional, transitional role

in day-to-day behavior" with those enabled by command economies and the "quick halt to

breakneck technical change" they wrought.[1050] Congressional interest is essential in pursuing

jointness, but the form matters. Legislative oversight ought to strengthen the 'invisible hand' that

promotes continual competition for doctrinal and materiel advances, not merely provide epochal,

one-off nudges toward greater bureaucratic centralization. The latter approach drives reliance on

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[1046] See "Has It Worked? The Goldwater-Nichols Reorganization Act," *Naval War College Review* 54, no. 4 (2001): 112-13.

[1047] Peter W. Singer, "Comparing Defense Budgets, Apples to Apples," *Time*, 25 September 2012. http://nation.time.com/2012/09/25/comparing-defense-budgets-apples-to-apples/.

[1048] Locher, "Has It Worked?," 113.

[1049] William H. McNeill, *The Pursuit of Power: Technology, Armed Force, and Society since A.D. 1000* (Chicago: The University of Chicago Press, 1982), 21.

[1050] Ibid., 385-86. McNeill wrestled with the problem of how to move societies back from the precipice of increasingly destructive technologies—military-industrial developments that threatened to wipe out huge segments of the population whenever combat erupted. His observations about the innovative path to that point, though, are instructive to military professionals, who he labeled the "macroparasites" of the civilization he was interested in saving; ibid., vii.

assumptions about defense needs formulated the way Marxism plans a national economy; the likely result is stultifying effects on military capability of the type that have accrued to centrally planned economies.

III. Prospects for Air-Sea Battle

The Air-Sea Battle concept is primarily a pursuit of the Air Force and the Navy, but includes token involvement by the Army and Marines as well. Based on the conditions observed that led to successful, if fleeting, joint cooperation in other instances, does this program have a reasonable chance of becoming an influential example of inter-service cooperation?

Analysis begins according to the parameters of jointness delineated in Chapter 6. With respect to exogenous influence, the type of conflict envisioned in Air-Sea Battle is long-distance warfare in the Pacific theater. The cultural preferences of the services impact their voluntary cooperation with one another. Analysis of Air Force and Navy culture reveals that both tend to adopt a strategic perspective of theater defense, particularly when it comes to protection of the capital investments they have made in weapons-system equipment. McNamara observed the Navy's view that "putting its capital ships at risk in a tactical battle could cause the theater to collapse. The argument is reminiscent of the Air Force's prioritizing theater air warfare over tactical air warfare."[1051] The development of Air-Sea Battle then is not surprising; it accommodates the strategic visions both services have of themselves without forcing close-quarter points of friction that can quickly fray patience. Air-Sea Battle has both momentum and critics. The Army-Marine Corps alliance with respect to "Strategic Land Power" shows that there is a reflexive resistance arising to the concept within the Pentagon—the divided, striving, real Pentagon, not the mythically unified 'Fortress America.'

[1051] Stephen J. McNamara, *Air Power's Gordian Knot: Centralized versus Organic Control* (Maxwell Air Force Base: Air University Press, 1994), 147.

Since the U.S. diplomatic establishment has expressed a desire to "pivot" attention from the Middle East to this region, there appears to be superficial alignment with a stated high-level objective.[1052] The project's potential for joint cooperation, again because it envisions high-intensity, inter-continental warfare, offers the kind of unconstrained battle that lends itself to multi-service buy-in, just as did the struggle to prepare for Central European battles in the 1980s. The devil is in the details, though, and initial marketing campaigns seemed to have put off the Army and Marines in ways that the similarly named AirLand Battle did not isolate the out-group services in its day.

Closely related to the Pacific pivot are Air-Sea Battle's prospects for aligning multi-strata interests. An observer must acknowledge the aspirational nature of placing greater attention on Pacific concerns, though. Both Europe and the Middle East seem to demand an outsized slice of U.S. foreign policy focus at this writing. As opposed to the established and widely accepted Soviet threat that underpinned AirLand Battle and allowed it to capture inter-strata interests, the conditions that would lead to success for Air-Sea Battle remain rooted in the wishes of diplomats widely discounted by many observers.[1053] The search for a convincing and credible joint leader who will make Air-Sea Battle dominate defense debates also seems as yet elusive. One influential interviewee who participated in this study did *not* find it sufficiently steeped in jointness to merit further promotion.[1054] The outgoing head of the Air Force's Air-Sea Battle program recently joined a service-specific advocacy organization, suggesting a parochialism

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[1052] See, *inter alia,* Albert R. Hunt, "Obama's Fraught Foreign Policy Dreams," *The International New York Times*, 28 April 2014, online resource. http://www.nytimes.com/2014/04/28/us/politics/obamas-fraught-foreign-policy-dreams.html?_r=0; Colleen McCain Nelson, "Obama Tries Again on Asia Pivot," *The Wall Street Journal*, 22 April 2014. http://online.wsj.com/news/articles/SB10001424052702304279904579516041148327548., online resource

[1053] See, *inter alia*, "America's Non-Pivot to Asia," *The Wall Street Journal*, 9 March 2014, online resource. http://online.wsj.com/news/articles/SB10001424052702303369904579423530847513384.

[1054] The officer, who wished to remain off the record on this point, was involved in coordination of the Quadrennial Defense Review for the Air Force, and found the presentation of Air-Sea Battle to be too off-putting to the Army and Marine Corps.

distinct from AirLand Battle's inclusivity.[1055] Finally, some of Air-Sea Battle's modest aims may keep it from drawing together sufficient meso-organizational interest. Unlike AirLand Battle, proponents repeatedly insist that the concept "is not a strategy nor was it designed to be an *uber* solution to all of our pending operational challenges."[1056] Such a soft-sell approach may not carry sufficient weight to unify those who *are* looking for a comprehensive solution, and the advantage may go to the first ones bold enough to propose one.

Moving to the observations of this chapter, Air-Sea Battle does promise some of the improvements that are material to useful jointness, particularly in the area of inter-operability, which is arguably the easiest theme to identify in the concept. The existence of a large Pentagon office to promote the concept speaks to the Air Force and Navy's realization that extra effort will be required for any amount of success. A distinctly exogenous call for Air-Sea Battle's continuation is elusive, though some congressional hearings have called it to attention at this most critical level. Legislators still seem to be grasping for an understanding of the essence of the concept. A hearing on "Air and Sea Battle" [*sic*] in 2013 may reflect the naiveté of transcribers more than Congressional ignorance (the hosting Congressman called Air-Sea Battle by its Pentagon-endowed moniker in the *Congressional Record*), but the grasp of Air-Sea Battle vis-à-vis AirLand Battle was sketchy, with Air-Sea Battle being elevated in status to a "strategy," something its military proponents insist it is not.[1057] In terms of the needed multi-level coalescence needed to advance a joint concept into the realm of wide acceptance, Air-Sea Battle advocates appear to be gaining ground on some fronts. In addition to the overall current

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[1055] "I am also pleased to report that we have a new member on the Mitchell team—Col. Jordan Thomas (Ret.). Jordan served as a B-1 pilot and recently concluded his Air Force career as the chief of the Air-Sea Battle Office. His experience, informed perspective, and air-minded attitude serve as tremendous assets to the organization;" Deptula e-mail #3, 5 June 2014.

[1056] Frank Hoffman, "The Simmering Pottage: Air Sea Battle and QDR 2014," War on the Rocks, accessed 27 June 2014, http://warontherocks.com/2013/11/the-simmering-pottage-air-sea-battle-and-qdr-2014/.

[1057] *Hearing on Air and Sea Battle Strategy, Governance, and Policy*, 6.

administration's tone of a pivot to the Pacific region, members of Congress have started to

defend against cuts in the naval power that is a key component of any scheme to retain access

there.[1058]

A dominant leader who has adopted the concept personally remains as yet out of sight, as

does an obvious coalescence of interests. Open fighting over the concept has not emerged, and

instead the service chiefs make tangential references to their services' competing concepts. The

lukewarm nature of these exchanges does not portend great things for a joint concept.

More time will determine if Air-Sea Battle can grow into a dominant shaper of military

readiness. The mix of air and water in its title suggest a hydroponic gardening metaphor, and the

question remains if these gossamer roots can survive the rough-and-tumble environs of the

endogenous pot in which the Air Force and Navy are attempting to make it blossom.[1059] In

addition to concerted effort by the U.S. defense establishment, some aspects of geopolitical

reality need to change. The likelihood that these will shift in accordance with the hopes of

western diplomacy seems remote, partly because those hopes have been articulated out loud and

the world loves to play spoiler to the foreign-policy dreams of the U.S. AirLand Battle drew its

unifying strength from a national consensus that the Soviet Union-Warsaw Pact entity was an

existential threat that merited a comprehensive response. The Army internalized this and

formulated a doctrinal framework that ultimately brought the Air Force along in a shared vision

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[1058] See, e.g., Randy J. Forbes, "The Navy and the Army Are Facing Debilitating Cuts," *The Wall Street Journal*, 6 March 2014. http://online.wsj.com/news/articles/SB10001424052702303630904579419132585885144. Noting that Congressman Forbes is from Virginia, chairs the House Armed Services Seapower and Projection Forces Subcommittee, represents a district with significant veteran and shipbuilding interests, and has consistently advocated for more ship-building for the U.S. Navy, his advocacy could be quite narrow in its appeal. ASB will need to appeal to a broader slate of congressional leadership before it becomes as strong a concept as ALB, for example.

[1059] It is comparatively difficult to get things to take root in either air or water, as compared to land; even most hydroponic crops make use of some sort of solid substrate for anchoring their base. The metaphor extends to both the Air Force and the Navy, who sometimes struggle to make their defense contributions less abstract in comparison to the services who can demonstrate how they take and hold territory, or 'ground.'

of conflict. There is a similar national consensus from which Air-Sea Battle derives its credibility, but it is not as unified or as certain as that which drove AirLand Battle. Chief of Naval Operations Admiral Jonathan Greenert captured this idea well in a recent description: "The Asia-Pacific rebalance, as we know, is a broad government effort. It's a U.S. government effort, and there's no real particular end-state yet, that I'm aware or that we have been given, that is declared."[1060] Greenert went on to remark that "sea power is going to underwrite the Asia-Pacific rebalance," which demonstrates the Navy's affinity for the renewed focus eastward, but his earlier comment reflects the reality that the geopolitics are not yet a settled issue.[1061] As much as the current administration and nation as a whole might *wish* to rebalance toward Asia, there is a realization, sometimes explicit, sometimes tacit, that other imperatives might keep the U.S. military focused elsewhere. The lack of unified vision and a clear, singular threat undermines the potency of Air-Sea Battle relative to that of AirLand Battle.

Is the Air-Sea Battle concept good for strategic debate?
Part of the Navy-Air Force strategy for using Air-Sea Battle may be explained in terms of heresthetics.[1062] That is, the dearth of defense options available for consideration by Congress and the President, and even at times the Secretary of Defense, arise not out of a lack of resources, but rather because of the way in which the services pose questions about national defense. If Krepinevich's CSBA convinces a preponderance of the defense establishment that, as it has claimed, the "U.S. military today faces an emerging major operational challenge, particularly in the Western Pacific Theater of Operations (WPTO)," organizing, training, and equipping for that

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[1060] Jonathan W. Greenert (Admiral, USN; Chief of Naval Operations), remarks at the Center for Strategic and International Studies, 19 May 2014.
[1061] Ibid.
[1062] William Riker coined the term *heresthetic* to refer to a situation in which people gain a political victory because "they have set up the situation in such a way that other people will want to join them—or will feel forced by circumstances to join them—even without any persuasion at all;" see Riker, *The Art of Political Manipulation*, ix.

challenge are likely to take place.[1063] These might occur even though it is impossible to prove

that anti-access challenges in the WPTO are more pressing than, say, Russian aggression in

Ukraine, instability in South America, or terrorism originating in the Sahel.

As William Riker posed the heresthetic dilemma, major policy decisions in the U.S. are

based on "random stability" and reflect "the accident of who happens to be judge."[1064] While

there is a great desire to gravitate to an overarching operational concept that at once defines a

primary threat and provides a means to 'solve' it, there is no guarantee that the operational

concept reflects developing geopolitical realities. If the military deliberately pursues a heresthetic

strategy with respect to Air-Sea Battle, the language of agency theory would label this as

deliberate implementation slack by the Joint Staff or the services, an area that demands

immediate exogenous involvement and remediation. On the positive side, given the dangers of

strategic monism and the demonstrated tendency of Pentagon leaders to look for a single

unifying military concept as a means of promoting jointness, this study finds a great deal of good

in the efforts of the Strategic Land Power Initiative to play a counter-melody alongside Air-Sea

Battle in the concert of ideas.

IV. Conclusion: Lamentations and Optimism for Jointness

The motivation for this study came from a desire to unearth some understanding of the

conditions that lead to successful joint cooperation. Realizing that a definitive theory of joint

cooperation eludes determination from the small-*n* sample of cases examined here, the work has

identified cases that suggest joint cooperation indeed occurs—sometimes against expectations—

and some of the common features that make a routine appearance when it happens. At both

theoretical and practical levels, therefore, these common features may be helpful to those who

study jointness and who attempt to put it to work for national defense.

[1063] Van Tol et al., *Airsea Battle (CSBA)*, ix.
[1064] Riker, *The Art of Political Manipulation*, 146-47.

The most striking unexpected finding, however, was the visible, repeated demise of jointness once attained. In each of the three cases studied, a hard-fought and deliberate struggle to build an inter-service *something* resulted in better cooperation, closer relationships, programmatic efficiency, or superior results on the battlefield. In frequent paeans to jointness, these are the positive outcomes that the defense establishment touts in its advocacy of the concept. Many members of the establishment, including almost every person interviewed in this work, readily concede that jointness does in fact have positive outcomes that make a significant contribution to improved national security.

With dismay, however, this study notes that all of the examples of joint cooperation either ended, or, in the case of the example that is still ongoing, appeared to be headed toward an era of diminished cooperation. In the case of AirLand Battle, the era of jointness ended rather abruptly, with external factors changing the nature of defense debates in such a way that rendered the existing joint construct impotent. With regard to the JPATS trainer and joint aviation schools, the fast-moving 'model of jointness' that had overcome so much internal friction early on bled out slowly as the faces changed in the offices that had originally enabled such a program. A thousand parochial cuts removed the heart of jointness, replacing it with independent single-service programs.

OEF and OIF are still too contemporary to be viewed with a fixed historical perspective, and too many of the documents that will provide a clear picture of how battlefield jointness rose and fell remain classified. The sense based on this study, though, is that a fear of failure and pressure to demonstrate cooperative competence quickly led to vast improvements in CAS and ISR coordination under the watch of one set of leaders. A pendulum swung during the tenures of another set, though, with enduring improvement unlikely to result. Rather than pursue jointness

for the sake of battlefield efficiencies, those running the wars after they had become 'routine' allowed pursuit of parochial doctrinal preferences to not only mar the finish of jointness polished by war, but also threaten to dismantle its underlying structure. An injection of new leadership—one equipped to see the value of jointness—may have saved some of the progress at the end, but only time will reveal whether the Army and Air Force drift apart in the area of air-ground support as they have after every preceding major conflict. If the jointness achieved under the threat of combat unraveled to a large degree, it will, unfortunately, have matched a trend consistent with other observations in this study.

Why this should be troubling merits some discussion. There are a few good reasons to guard against 'unbridled' jointness, not least because of the competition-quashing characteristics attendant with its most negative manifestations. The other argument, one that ties the unifying views of jointness to strategic monism and its eggs-in-one-basket risk is another strong point in any anti-jointness debate. This study proposes, however, that debate-stifling 'universal' doctrine is the weakest, least useful manifestation of jointness, and rarely if at all fosters the effectiveness or efficiency toward which it strives. Further, a unifying vision that inspires jointness need not adopt an ostrich-like perspective blind to the range of likely threats—there is room for multiple voices in formulating the vision, even if it is likely to be 'sold' by a singularly strong proponent. Once these suspicions about jointness are adequately addressed, many would agree that jointness could and does enable effectiveness on the battlefield and sometimes even efficiency in the halls of the Pentagon. If jointness has irrefragable benefits, the question of why it seems always to fall apart after a season of success should be an area of prime concern to practitioners in the defense establishment.

A definitive reason is an area for further study. The case studies covered here do not provide a large enough set of samples to extrapolate sweeping claims, but they do reveal three trends that each case study had in common. The first is that the pursuit of jointness in every case required leaders to expend a certain amount of energy to divert the normal streams of bureaucratic routine. The motivation for such efforts may have been more or less obviously internal or external, but one or more interested actors did something—going beyond what their military duties called for on the surface—to pursue jointness. Because military service is particularly transient—people hold individual offices for only a few years at most, and often for very short periods of time as they advance in rank—the likelihood that bureaucratic friction will defang a joint effort is high unless it has built up so much momentum early on as to be unstoppable.

The second reality that confronts jointness in this study is the changing nature of the external forces that drive it in the first place. Structural norms of the world shift, both abruptly and gradually, with no predictable pattern. The threats of combat, often the most effective drivers of jointness, over time lose their ability to drive the services together. Even if the 'war' is not over, the 'battles' may become so customary that services feel comfortable enough to slip into advocacy for their parochial preferences rather than compromise in pursuit of joint solutions. Likewise, if the inspiration for jointness is a domestic-exogenous factor—Congress's focused interest, say, as in the case of the JPATS trainer or the national security establishment's particular concern about the Soviet threat, which set the conditions for AirLand Battle's success—these factors also diminish over time. The Iron Curtain came down. The Gulf War opened up new debates about the primacy of one service over another. Congress always moves on to the next hot political topic. If the world exhibits a structure that shapes major debates about

the best way to pursue security, that structure and the debates about it invariably change over time. Where jointness benefits from these debates in one era, it can become a victim in the next.

Finally, the last common threat to jointness that emerged from this study is one of human pride. There is a spectrum to this pride and the velocity with which it unravels jointness. Pride sometimes appears as parochialism, as when the Marine Corps in the Gulf War refused to adopt certain language about the air component commander and referred to him in ways that emphasized their independence. It can be more blatant, as in the Air Force's 'arrogance' following the Gulf War and the Balkan campaigns that effectively shelved a high degree of joint thinking bundled up in AirLand Battle. Pride can even be manifested in ways so innocuous that the services might justifiably refer to them as matters of '*esprit de corps*,' such as giving the JPATS trainer aircraft different paint schemes for Navy and Air Force versions, or building modern facilities for Air Force training at Pensacola. After all, these are merely ways to instill service identity and 'take care of our people,' to use a popular phrase in a commander's vocabulary. Yet items like these seem to have become the first of many small cuts that bled out the jointness in a major initiative that for a time exposed the services' young aviation candidates to genuine jointness, a pursuit that may have paid dividends in later years.

'Hubris' becomes a more appropriate label for this pride when it manifests itself in open inter-service scorn among military figures, as seems apparent during some eras of OEF and OIF. The setbacks of blatant personality conflicts and the bickering they induce can be overcome by cooler heads and rational thought in their wake, but the wrenches they throw into command-and-control schemes are perhaps dwarfed by the threat of future inter-service mistrust and a tendency to snap back to comfortable, parochial preferences. Once bitten, flag officers are twice shy about losing service prestige and autonomy in the arena of voluntary jointness. For the good of national

defense, joint leaders should set aside pride and *ad hominem* attacks while they make the best case for the theory of victory in which they believe. Because men are not "angels," however, it will require engaged leadership from an informed and involved exogenous source to rescue the services from the morass of pretend jointness in which they currently exist.[1065]

In retrospect, the author started his military career in what may have been a golden era of U.S. jointness. Entering a service academy just after the end of the Gulf War and just over five years after the passage of the Goldwater-Nichols Act, the imperatives for and benefits of jointness seemed readily apparent. A semester as an exchange student to West Point was a positive addition to an education at the Air Force Academy. Frequent exposure to contemporaries at Annapolis gave way to a *bona fide* stint of joint-aviation training at Pensacola in the late 1990s. This early exposure made work with sister-service peers easier. In addition to being able to bridge the jargon gap among the services, an appreciation emerged for different perspectives, being imbued as empathy and polyglotism come to a well-traveled child. This appreciation made all aspects of a military career easier, from administrative coordination to working together on the battlefield. It was a comparative advantage.

An unmistakable sense of underlying mistrust has crept in, though, one that is promulgated by senior service leadership. The value of having Air Force credibility—as opposed to joint credibility—became apparent over time. My expectation for jointness was characterized by mutual respect for other services and open dialogue on points of disagreement, but this seems to

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[1065] The idea borrows from James Madison's idea (writing as 'Publius') of the fundamental necessity for checks and balances in government. If men were angels, no government would be necessary. "If angels were to govern men, neither external nor internal controls on government would be necessary. In framing a government which is to be administered by men over men, the great difficulty lies in this: you must first enable the government to control the governed; and in the next place oblige it to control itself. A dependence on the people is, no doubt, the primary control on the government; but experience has taught mankind the necessity of auxiliary precautions; see James Madison, "The Federalist, No. 51 (The Structure of the Government Must Furnish the Proper Checks and Balances Between the Different Departments)," *Independent Journal*, 6 February 1788. http://www.ourdocuments.gov/doc.php?flash=true&doc=10.

be a minority viewpoint. This political reality runs counter to the congressionally mandated message advanced at DoD's middle- and senior-service schools, which bring field grade officers together in the name of jointness. At this level, though, it is too late to undo the mistrust that has accumulated, and the exposure is too limited to pretend to be anything other than a late-career 'square filler.'[1066] This investigation has resulted in a clear-eyed picture that the favorable pictures of systemic jointness promulgated by joint publications are mirages, but that there are mechanisms by which interested parties at any stratum of the defense establishment can foster helpful joint cooperation.

Careful Listening for Many Perspectives
The bent of scholarship over the past few decades has served to build distrust of senior military leaders and advocate for more civilian control. These sentiments have been reflected in legislation and policy changes, but in practice this has led to more centralization and niggling interference that increases neither efficiency nor effectiveness. Andrew Bacevich is correct to call for "untying the hands of senior commanders."[1067] The scope of American military options is simply too broad to be grasped by itinerant outsiders. If the nation is to have good military advice, it will come from bright, motivated, and empowered joint military leaders. Unfortunately, these leaders will not be able to emerge from the bureaucratic structures of the Pentagon without outside assistance. It will take continual prodding and encouragement from exogenous actors, either in the executive or legislative branches, to see where good ideas lie and to ensure they receive proper airing.

[1066] A representative survey comment on this topic opined that jointness is not taught to officers until late in their careers, "by which time they are steeped in hierarchical stove-piping" and have learned the art of budget-based logrolling as opposed to cooperative skills that can increase capability or efficiency; Keven Gambold (Chief Operations Officer, Unmanned Experts LLC), e-mail exchange with the author, 2 July 2014.
[1067] Andrew J. Bacevich, *The Limits of Power: The End of American Exceptionalism* (New York: Metropolitan Books, Henry Holt and Company, 2008), 137.

There is no compelling, *a priori* reason to think that this approach to building jointness cannot work, unless one's pessimism about the obstacles is so severe as to cause complete loss of hope for military success. Understanding the correct tension here is paramount. Congress need not micromanage defense policy, and the executive does not have to return to picking targets during lunch.[1068] Nor does this study advocate turning over affairs of state to military leaders, giving them leeway to craft military strategy unchecked by civilian review. There is an imperative for oversight, because it alone can ensure the best military advice gets a fair hearing. The objective civilian control of the military that exists today would be enhanced—not supplanted—by a competitive process.

There are imperatives in the other strata of the defense establishment as well, whether they are service chiefs, joint force commanders, or fighters at the lowest echelon. It is the responsibility of truly joint-minded military members to reach out to exogenous organizations and advocate for better efficiency and expose endogenous obstacles to cooperation. The idea is not new. Huntington, long the chief advocate of objective control, recognized decades ago the value of strategic pluralism. He described in detail how the American separation of powers leads to an airing of many voices that collectively provide solutions to security problems, but as his illustrative example shows, this debate does not happen without exogenous encouragement and protection from smothering inter-service politics.[1069]


[1068] President Johnson's "Tuesday Lunch Group," convened for management of the Vietnam War, offered him a chance to meet with close advisers in a forum smaller than the National Security Council, which assisted in his continual battle against press leaks. The series of meetings, though, gave a "widespread impression that Johnson micro-managed the bombing of North Vietnam," which was "dramatically confirmed" in archival evidence, and stands as an example of a low point in executive trust of the military services to achieve national objectives; see David M. Barrett, "Doing 'Tuesday Lunch' at Lyndon Johnson's White House: New Archival Evidence on Vietnam Decisionmaking," *Political Science and Politics* 24, no. 4 (1991): 678.

[1069] Huntington used the B-36 controversy (the 'Revolt of the Admirals') and the attendant congressional hearings to show how defense advocates use a "pluralistic strategy" to pursue their relatively weak political position; see Huntington, *The Soldier and the State*, 419.

Even an ideal balance of trust, communication, enlightened military strategy, and responsive industrial sector does not guarantee military-strategic success—jointness is no panacea. *"Friction…makes the apparently easy so difficult,"* Clausewitz reminds; *"there is not and cannot be any science of war, and…therefore there can be no such thing as a military genius,"* Tolstoy intones.[1070] The humility and sense of striving these sober realities should engender in good civilian and military leadership is cause for optimism, though. Only after realizing the monumental task implicit in crafting national strategy can those charged with its formation assign it the attention and gravity it deserves.

I am tempted to declare dogmatically that whatever doctrine the Armed Forces are working on now, they have got it wrong. I am also tempted to declare that it does not matter that they have got it wrong. What does matter is their capacity to get it right quickly when the moment arrives.[1071]

Sir Michael Howard, "Military Science in the Age of Peace"
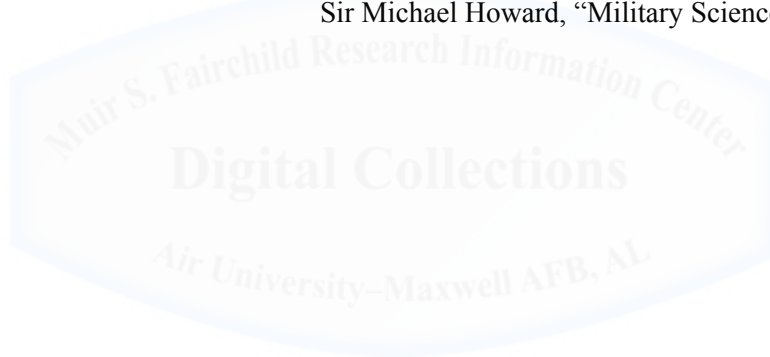
[1070] Clausewitz, *On War*, 121; Tolstoy, *War and Peace*, 1243.

[1071] Howard gave the lecture from which these words come on 3 October 1973. The quotation is borrowed from a transcript; see Michael Howard, "Chesney Memorial Gold Medal Lecture: Military Science in the Age of Peace," *RUSI Journal* 119, no. 1 (1974): 4.

APPENDIX A

AMPLIFIED ANALYSIS OF COIN AIR POWER

I. Introduction

The case study in Chapter 5 attempted to boil down a lengthy and complex era of combat in order to distill some observations about joint cooperation. Fitting the highlights of the research effort into the constraints of the chapter required severe reduction of some essential arguments, some of which are still given to impassioned debate. The first part of this appendix serves as an amplification of some of those arguments, providing evidence for some of the more controversial points mentioned in the main body of this dissertation.

The second part steps through a specific, lens-by-lens discussion of each of the theoretical perspectives used to analyze joint cooperation. It serves as an example of the thought processes used to derive the most striking theoretical lessons from each case-study example. These have been summarized in the case-study chapters and aggregated in Chapter 6, but this appendix provides a complete survey of all lenses as they were applied to one case study. Seeing how this application proceeded in one instance provides a more in-depth view of how this work linked its historical process-tracing studies to the abstractions of generalized academic theories and military-specific observations.

II. Counter-Insurgency (COIN) Warfare and Air Support to Ground Forces

Greek mythology tells the story of Sisyphus, a clever but deceitful king whose eternal fate was to push a boulder up a hill, only to have it roll down just before he reached the top. The boulder's elusiveness, imparted by Zeus' divine hex, doomed Sisyphus to a routine of vexing and unproductive monotony. Sisyphus earned his punishment as recompense for his ill-spent life, which was marked by strong self-interest, violence, and double-dealing with those closest to him. The story offers a cautionary analogy for the U.S. military services, which are charged to cooperate and work together on the battlefield. Cooperation seems to offer a chance for maximum efficiency, allowing a united military establishment to accomplish missions and defeat threats one service could not dispatch alone.

Yet a perusal of U.S. military history suggests that the quest to achieve cooperation among the military services is frustratingly repetitive and elusive—a truly Sisyphean task, one exacerbated by the services' strong institutional beliefs and habits. This appendix delves into the particular difficulties and paradoxes that inhere in pursuing 'jointness' to perform missions that do not align with the services' cultural preferences or their dominant theories of victory. Over the course of research for this larger study, two such missions that appeared multiple times in this light were COIN warfare and the provision of direct support to ground forces by an air component or separate air force. A Sisyphean metaphor seems particularly apt to describe them.

A. COIN: A Transcendent, Yet Neglected, Set of Military Capabilities

Morris Janowitz offered a prescient view of the contemporary character of war that has proven true over more than five decades. He described enduring tension between high-end warfare involving weapons of mass destruction and conflicts that demand proficiency in "para-military operations, in guerrilla, and counter-guerilla warfare."[1072] The U.S. military establishment has

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[1072] Janowitz, *The Professional Soldier: A Social and Political Portrait*, 418. U.S. Air Force foibles in the nuclear arena highlight the difficulty of maintaining dual proficiencies; see Michael R. Gordon, "17 Officers Removed from

used cumbersome terminology over the years to capture this idea, including "military operations other than war."[1073] "MOOTW," an esoteric acronym that came complete with an insider's pronunciation, had a short half-life in the endless churn of Pentagon jargon, but the term and its more current etymological cousins emphasize the idea that there is a spectrum of military activity "short of war." These military activities cover a spectrum of warfare spanning battle against a recognizable enemy to actions more closely resembling law enforcement or humanitarian assistance.[1074] Their labels carry substantial weight of meaning for military organizations: "other than war" suggests some idea of the enthusiasm with which military services who view themselves as "warfighting" organizations might approach this type of conflict.[1075]

COIN operations comprise a low- to mid-range subset of the MOOTW spectrum—they are called "stability operations" in current parlance.[1076] As its name implies, COIN is an effort to end the low-intensity beginnings of a revolutionary war before it moves to its final, conventional stages.[1077] COIN, when used to describe specific military missions, encompasses a range of subordinate specialties that have varied over time as military technologies change. Broadly, though, COIN refers to a style of conflict practiced by an established, technologically capable military force against opposition that is by comparison smaller, weaker, and less sophisticated. The lesser force is likely indigenous to the country where military operations occur. Its leadership makes appeals to ideology, nationalism, or tribal identity to unify and energize the resistance movement.

Insurgencies and adversarial military counter-campaigns have existed throughout recorded history. In the modern era, T.E. Lawrence participated in and documented COIN efforts on the Arabian Peninsula.[1078] According to John Shy and Thomas Collier, Mao Tse-Tung remains the leading authority on revolutionary war; he offers the most durable formulae for uniting Carl von Clausewitz's trinity of the military, the people, and the government through guerrilla warfare.[1079]

Nuclear Watch," *The New York TImes*, 9 May 2013; Thom Shanker, "2 Leaders Ousted from Air Force in Atomic Errors," *The New York Times*, 6 June 2008. http://www.nytimes.com/2008/06/06/washington/06military.html?fta=y.

[1073] Military Art and Science classes at the U.S. Air Force Academy in the late 1990s emphasized that the preferred pronunciation the acronym MOOTW was 'moo '**twah**,' seemingly suitable for a French dairy cow. See "Joint Publication 3-07: Joint Doctrine for Military Operations Other than War," (Washington DC: Joint Chiefs of Staff, 1995).

[1074] Michael Howard, *War in European History* (New York: Oxford University Press, 1976), 143-44.

[1075] In particular, the Marine Corps is known for calling its philosophy of arms "warfighting." The service's basic doctrine publication of the same name reflects a desire for Marines to internalize the philosophy: the introduction says it "is not meant as a reference manual; it is designed to be read from cover to cover;" see Marine Corps Doctrine Pamphlet 1: Warfighting; Department of the Navy, Headquarters United States Marine Corps, ii.

[1076] The current analogous joint publication is "Joint Publication 3-07: Stability Operations," (Washington DC: Joint Chiefs of Staff, 2011).

[1077] Shy and Collier identified guerrilla warfare as a subset of revolutionary war. They also pointed out that guerrilla tactics do not necessarily imply revolutionary aims, though "their revolutionary potential is never absent;" Shy and Collier, "Revolutionary War," 817.

[1078] 'Lawrence of Arabia' was a gifted archaeologist who happened into a military career out of a bit of bureaucratic whimsy, then became instrumental in leading Britain's WWI actions in the Middle East. Though very successful in his campaigns, his identification with the Arab people and his knowledge of duplicitous colonial aims on the region by Britain and France put him at odds with superiors and left him severely conflicted at the end of the war; see Thomas Edward Lawrence, *Seven Pillars of Wisdom: A Triumph* 2011 ed. (Blacksburg: Wilder Publications, 1922).

[1079] Shy and Collier, "Revolutionary War," 838-39. For Clausewitz's perspective of the interrelationships between the government, people, and military, see Clausewitz, *On War*, 592-94. Though American attention to this kind of warfare is usually lacking, the recent conflicts in Afghanistan and Iraq endured long enough to produce significant interest. The interest spawned several recent books by both civilian and military authors who have given the topic a thorough theoretical and practical treatment. See, e.g., Nagl, *Learning to Eat Soup with a Knife: Counterinsurgency*

In American usage, 'MOOTW' gave way to verbiage speaking of a 'range of military operations' (ROMO), acknowledging that political constraints frequently lead to military employment of a form less than full-scale war. 'Stability operations' is a term of art that acknowledges the deployment of military power is sometimes necessary to avoid higher-level conflict. Yet this does not mean that militaries eagerly embrace preparations for the lower end of the range. The U.S. military quite obviously has a preference toward MCO and eschews COIN. More specifically, the Army makes reluctant forays back into the discipline when it appears that no other option is available. The Air Force and the Navy for the most part ignore the problem, relegating it to the world of special operations and keeping up appearances of support when necessary.

In 2001, the U.S. military embarked on more than a decade of conflict characterized by COIN efforts. Small wars, not the envisioned Soviet aggression that drove Cold War planning, were the dominant security problem. When a lower-intensity form of war ensued, it revealed shortfalls in inter-service preparation and cooperation. Initial success in removing ruling regimes with conventional MCO came quickly. Heavy bombing campaigns against the governmental and military structures of the ruling regimes in Afghanistan and Iraq enabled their quick removal by ground forces. Once the nature of battle turned to that of conventional forces engaging in COIN warfare against dispersed enemies, though, early missteps resulted in casualties and significant exchanges of disparaging rhetoric between the Army and Air Force. Technological advances, training initiatives, and command structures addressed seams and capability gaps that inspired the inter-service war of words, resulting in improved effectiveness as the conflicts wore on.

The history of COIN proficiency follows a path of cyclic, uneven development, atrophy, and re-discovery. The U.S. military has exhibited disinterest in its knowledge of strategy and tactics appropriate for waging an indirect COIN campaign. Similarly, American scholarship is guilty of sinusoidal neglect in its attention to the subject, sporadically giving voice to a coherent philosophy about its conduct.[1080] The following descriptions provide a brief sketch of COIN philosophies—one more successful than the other—that provide perspective as to why this is so.

B. COIN Philosophies
1. The Direct Approach
There are two broad means of waging a COIN effort; they are labeled the *direct* and *indirect* approaches. The direct method—sometimes called an annihilation strategy—follows the prescriptions of the strategist Antoine-Henri Jomini to defeat and destroy revolutionary forces. Conceptually simple, the rationale for such a strategy holds that by destroying enough of an enemy's personnel and means to wage resistance, the revolutionary struggle will eventually

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Lessons from Malaya and Vietnam; Max Boot, *The Savage Wars of Peace: Small Wars and the Rise of American Power* (New York: Basic Books, 2002); Anthony James Joes, *Resisting Rebellion: The History and Politics of Counterinsurgency* (Lexington: The University Press of Kentucky, 2004).

[1080] When nations find themselves enmeshed in COIN warfare, academics and publishers produce books about it; see, e.g., Roger Trinquier, *Modern Warfare: A French View of Counterinsurgency*, trans. Daniel Lee, 2006 ed. PSI Classics of the Counterinsurgency Era (Westport, CT: Praeger Security International, 1964). The rest of the time, the topic goes largely unmentioned. The cause of the phenomenon lies as much with the economics of publishing as academic neglect. The first of two exceptions to prove the rule comes from Gray, who described the need for small war proficiency prior to the U.S. military's reawakened need for it after 9/11; see Gray, *Modern Strategy*, 273-96. Earlier, Janowitz may have had fresh memories of the Korean conflict in describing the need for effective constabulary functions of the U.S. military, but his accurate prediction was out of sync with an establishment more focused on nuclear conflict than the small advisory presence then in place in Viet Nam; Janowitz, *The Professional Soldier: A Social and Political Portrait*, 418.

cease. Examples of this type of approach to countering revolutions include most of the American effort in Vietnam, where General William Westmoreland offered body counts as evidence that the U.S. was 'winning.' The reported metrics of the conflict consisted mostly of enemy killed and weapons destroyed, framing a flawed underlying assumption that victory would come with destruction of the Viet Cong's means of fighting.

The direct approach to COIN receives mostly hostile reviews by historians and scholars, as it seems to ignore a basic cause of political uprising, instead exacerbating it with a strategy of punishment. In T.R. Gurr's description of the sources of political revolution, frustration and discontent arise over a difference between what the conditions of life are and what people they feel they ought to be.[1081] A discrepancy develops between what someone can do to change her life situation (value capabilities) and what she would need to do to improve that situation to an acceptable level (value expectations). If the scope of discontent rises to a sufficient level of societal impact, its only outlet may become physical violence.[1082]

If a military force, especially one of foreign origin, is in the same area as people experiencing this level of discontent, the violence precipitated will likely target that force. Insurgents wage a campaign of small attacks designed to exhaust occupiers. Small attacks characterize early opposition since revolutionaries lack means for direct confrontation until they are able to gain additional support. In turn, the military force waging a direct campaign strikes at the source of violence with its own conventional military means, perhaps by bombing or some other direct application of firepower. But this type of retaliation tends to be indiscriminate, targeting civilians not originally involved in the political violence, who become more apt to join the revolutionary cause as the inconveniences and injustices of war become apparent. The more retaliation, the more political discontent; the COIN mission can quickly grow beyond the ability of the occupying force to resist. Absent a completely different approach, the military force is left to choose among near-complete annihilation of a society, self-perpetuating futility, or retreat that permits complete revolution.[1083]

2. The Indirect Approach

The indirect method is a more complex strategy of separation. It advocates a 'turning,' through persuasion rather than violence, of the indigenous population from which an incipient revolutionary force derives its ability to fight. The concept is more complex than annihilation strategy, and is derived from Clausewitz's understanding of the relationships among the 'trinity' of a population, the government it selects, and the military it raises. Rather than fight the revolutionary force through direct application of firepower, this type of COIN effort attempts to separate revolutionary forces from the population from which they draw succor. Minimum force against the revolutionary fighters demonstrates restraint by the existing government or a foreign interloper. Avoiding violence against non-aligned populations is both a demonstration of goodwill as well as an attempt to keep from fanning revolutionary sentiments among the people.

The indirect approach uses Mao's nuanced understanding of successful revolution to inform a COIN strategy. This type of COIN warfare corresponds in part with Janowitz'

[1081] This is "relative discontent" (RD) in Gurr's formulation; Gurr, *Why Men Rebel*, 13.
[1082] Ibid., 83-91.
[1083] To the vexation of any COIN effort, an object nation may return to a *status quo ante* once the offending interloper's absence removes inspiration for further revolutionary activity, obfuscating the original impetus for a COIN fight; ibid., 270.

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description of the military functioning as a "constabulary force."[1084] It is generally more successful, as demonstrated by the indirect British effort in Malaya compared to the direct American approach used in Vietnam.[1085] It also takes longer and involves a greater steady-state expenditure of resources and effort, including skills typically in short supply in the U.S. military and a steadfastness not often observed in U.S. foreign policy, to wage such a COIN campaign. It requires greater knowledge of local conditions and intimacy with indigenous populations. Its pursuit runs counter to strategies of annihilation and is incompatible with centralized command-and-control schemes; scholars have identified it as an area of neglect in the education of U.S. military officers.[1086]

COIN campaigns tend to further the development of unique military competencies for military organizations waging them. In general, ground forces develop considerable expertise in dealing with native populations, coming to understand the motivations of disparate sub-groups and learning to recognize and isolate combatants from the civil society into which they are integrated. They also learn how to detect and counter the methods of attack that the revolutionary forces favor in their strikes.[1087] However, U.S. military forces are traditionally focused on annihilation and so do not enter conflicts with the skill sets needed for COIN intact.[1088] Rather, they must rediscover the art of COIN warfare and inculcate their institutions afresh with an appreciation of how to wage it effectively.[1089]

There is thus a constant tension between the indirect method—recognized as the more effective means to wage COIN—and the acknowledged preferences of the U.S. military to meet opponents with an overwhelming mix of technology and firepower.[1090] This paradox stymied the U.S. response after MCO ended in both OEF and OIF. However, champions of the indirect approach in Afghanistan and Iraq appear to have prevailed over more than a decade of conflict—or at least to have been vindicated—after initially being held in contempt by civilian leadership early in the conflicts.[1091] Both Afghanistan and Iraq started out as smaller conventional wars intended to overthrow existing governments, then transformed into COIN conflicts as insurgencies blossomed within the two destabilized nations.[1092] This dynamic led to increasing

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[1084] Janowitz, *The Professional Soldier: A Social and Political Portrait*, 424.

[1085] See, e.g., Corum and Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists*, 190, 261; Shy and Collier, "Revolutionary War," 854, 56.

[1086] For a discussion of the appropriate COIN command and control compared to MCO, see Johnson, *Hard Fighting*, xxiv, Table S.1. Regarding the dearth of professional military education about COIN in the U.S., see Corum and Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists*, 439.

[1087] See Rosen, *Winning the Next War*, 100-05.

[1088] See, e.g., Nagl, *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam*, 115.

[1089] Suzanne Nielsen described the U.S. Army's "failing to retain what it had learned about counterinsurgency warfare in Vietnam and in building a force that was overly optimized toward…major conventional warfare in Europe;" Nielsen, *An Army Transformed: The U.S. Army's Post-Vietnam Recovery and the Dynamics of Change in Military Organizations*, 46.

[1090] Weigley, *The American Way of War: A History of United States Military Strategy and Policy*.

[1091] Disagreement between the Secretary of Defense and military leaders consulted about the strategy for the Iraq conflict was a matter of conspicuous public record; see Shanker, "New Strategy Vindicates Ex-Army Chief Shinseki."; Douglas Jehl and Dexter FIlkins, "The Struggle for Iraq: Troop Levels," *The New York TImes*, 5 September 2003. http://www.nytimes.com/2003/09/05/world/the-struggle-for-iraq-troop-levels-rumsfeld-eager-for-more-iraqis-to-keep-peace.html?pagewanted=2&src=pm.

[1092] Kaplan described how Secretary of Defense Donald Rumsfeld "despised" General Tommy Franks and held his war plans for Afghanistan, which called for significant troop commitments, in contempt. He also noted a proclivity to focus on quick victory in the initial stages of war and to discount the difficulties of instituting successful "regime

U.S. troop commitments in both nations after relatively small deployments proved unable to reach the broad COIN goals envisioned (though not always articulated) by national leadership. Regardless of the political dynamics that led to the situation, the U.S. became enmeshed in two long wars best fought using the strategy and tactics of COIN. On top of this, the physical terrain in both countries (mountain chains and other rough topography in Afghanistan; large swaths of desert in Iraq) made long-range mobility difficult. These conditions set the stage for a conflict that would require the surveillance and close support that air power delivers most effectively in such conflicts.[1093]

C. Air Support to Ground Forces
To build the context of Army-Air Force coordination and cooperation in Iraq and Afghanistan, this appendix offers a summary of the services' history with CAS and UAVs. The bulk of the narrative provides a thumbnail sketch of the history of CAS, which became a recognizable military mission in World War I and has appeared in every U.S. conflict since then. Where applicable, the story weaves in the history of UAV support. However, UAVs as they appear in the most recent conflicts are much newer weapons systems.[1094] Until 2000, Ehrhard wrote that the services had "only adopted UAVs on a shallow, episodic basis."[1095] Since 2001, the development of UAVs by all services has become more visible and their uses in combat a matter of routine. What CAS and UAVs have in common is that they drive the Army and Air Force into close relationships marked with dissatisfaction, accusations that range from 'inattention' to 'dereliction,' and a continual struggle for increased lower-echelon Army autonomy during war.

Air power developments to the present day have created an independent Air Force that tends to "ignore and downplay" the application of CAS and surveillance air power that is useful in small wars and COIN conflict, even though the earliest uses of air power lent themselves almost exclusively to these kinds of missions.[1096] The sections that follow show how cycles of combat and peace have caused the Air Force's and the Army's attention to, and competence in, these mission sets to wax and wane over the decades since powered flight became a reality.

1. Beginnings of Flight
Exploitation of the vertical dimension afforded by human flight remained a warrior's dream until the end of the eighteenth century, when France used observation balloons in a conflict with Belgium in 1794. Balloons and, later, airships previewed the potential of military maneuver in the vertical dimension, primarily as a means of observing enemy positions. Despite advocates'

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change;" Fred Kaplan, *Daydream Believers: How a Few Grand Ideas Wrecked American Power* (Hoboken: John Wiley & Sons, Inc., 2008), 32-49.

[1093] Corum and Johnson have described the conditions of combat for which air power is best suited. They argue, *inter alia*, that the support functions (reconnaissance, transport, etc.) are most important in COIN conflicts and that the high- and low-tech capabilities offered by air power assets can seize initiative for the conventional force that typically belongs to insurgents; Corum and Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists*, 427-35.

[1094] This usage deviates slightly from that of Ehrhard, who treated the universe of UAVs as a "weapons system;" Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 5-6. Since he wrote, the diversity of mature UAV platforms and their increasingly common capability to deliver ordnance ("weaponization") makes the plural *systems* warranted and for this study to distinguish between specific platforms using that terminology.

[1095] Ibid., 50.

[1096] Corum and Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists*, 4.

promises of multi-mission use, their utility stayed primarily fixed as observation platforms.[1097] Enthusiasm for these aircraft vied against a lack of mobility and the ease with which enemy guns could shoot them down, limiting effectiveness and proliferation. Because of the observation role they played, all aviation assets came under the initial auspices of military organizations charged with battlefield observation. In the U.S., that was the Army's Signal Corps.[1098] While not yet able to engage enemy troops directly, air power was wholly subsumed under the ground commander's authority and supported requirements for observation of the enemy force without controversy.

In 1903, the advent of powered, manned flight introduced the world to the age of aviation and with it changed the dynamics of its military application. Despite Orville and Wilbur Wright's inventiveness making it the birthplace of aviation, the U.S. at first showed little alacrity in developing military aircraft, and the men who demonstrated the possibility of powered flight sold the capability to the military with palpable nonchalance while interest in military dirigibles remained strong.[1099] With increasing aircraft capabilities and the desire to elevate above the trenches of World War I, military aviation began to grow, particularly as its ability to maneuver over the bloody morass of industrialized land warfare became evident.[1100] Optimism about the ability of air power to bring "campaigns to a short and decisive end" appears in the papers of the Army's third aviator, Lieutenant Benjamin Foulois, a glint of hope that has illuminated the doctrinal thinking of air service members ever since.[1101] The first experimental bombing missions took place in 1914, with observer aircraft dropping small ordnance on the massed troop formations they encountered.[1102] In WWI, the surveillance and artillery spotting capabilities of propeller-driven aircraft came into their own, along with an appreciation that armed airplanes could both fight each other and provide firepower in support of ground troops.[1103]

World War I witnessed the first instance of what today's military calls 'kinetic' air support, which implies the use of bombs, bullets, or other ordnance. During the battle of the Somme in 1916, the British Royal Flying Corps surveilled and bombed nearby units of the German army.[1104] In the spirit of experimentation that marked the early days of military aviation, pilots flying aircraft armed with automatic machine guns discovered a range of missions. They could shoot down enemy aircraft, both fixed-wing planes and the balloons so important to artillery spotting in positional warfare, as well as carry ordnance. Aircraft attacked important targets—such as artillery-spotting balloons—near the front, but also ventured after objectives that were far

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[1097] Count Zeppelin promised the Chief of Staff of the German Army that his airship would be able to attack troop concentrations and fortresses.

[1098] Hurley and Heimdahl, "The Roots of U.S. Military Aviation," 6.

[1099] Ibid., 11-13.

[1100] The Army had the opportunity to experience the utility of tactical reconnaissance and even a rifle fired successfully from an aircraft at practice targets on the ground in 1911; ibid., 18.

[1101] Lieutenants Frank Lahm and Frederick Humphreys trained in person and soloed aircraft with the Wright brothers in College Park, Maryland. Foulois, impressively, soloed an aircraft at Fort Sam Houston after learning from the Wrights via "correspondence."

[1102] William Edward Fischer, Jr., *The Development of Military Night Aviation to 1919* (Maxwell Air Force Base: Air University Press, 1998), 25.

[1103] Hasken, "A Historical Look at CAS," 2.

[1104] Lee Kennett, "Developments to 1939," in *Case Studies in the Development of Close Air Support*, ed. Benjamin Franklin Cooling (Washington DC: U.S. Government Printing Office, 1990), 17.

behind enemy lines.[1105] The latter type of attack gave rise to the concept of strategic bombing and a renaissance of ambitious thinking about military airpower that marked the interwar years. Combined-arms missions also appeared, though they did not inspire the same lofty war-winning hopes that strategic bombing did. Lee Kennett cited the first example of British CAS as occurring at Arras on 11 May 1917, when "aircraft worked directly with troops for the first time, attacking obstacles in the path of advancing infantry."[1106]

Because the U.S. was a late arrival to WWI hostilities, European combatants developed more experience in all military aerial missions, including CAS. The French air service supplied able CAS, reconnaissance, artillery spotting, and interdiction in support of French and U.S. offensives from June to November 1918.[1107] German lessons from the war reflected a balanced view of air power, and advocates on the German Air Staff advanced a comprehensive portfolio that included fighter-escorted strategic bombing, naval aviation, close air support, and the need for defensive counter-measures against enemy bombing campaigns.[1108]

WWI did not see significant U.S. squabbles over command and control of air power. The lack of controversy can perhaps be attributed to air power's novelty and its continued subordination to land forces. Aircraft technology and service preferences for its use had not yet developed with sufficient contrast and fervor to manifest itself in competition. The American services did not yet control competing air fleets—all military aviation still existed within the Army. Finally, ideology about the potential and best uses of air power had not yet been developed or debated to a significant degree, nor had the recent conflict allowed for a rigorous test of a particular air power theory. The interwar years saw all three of these doctrinal control rods removed, and robust air power philosophy debates began to heat up.

2. Interwar Ideology

The years between the two world wars witnessed extravagant claims by proponents of military aviation, with exchanges "negative in tone, if not acrimonious" between air power advocates and other military leaders.[1109] Untested proclamations about the strategic efficacy of aircraft pushed by the likes of Guilio Douhet centered on the idea that strategic bombing would have the ability to quickly end wars by demoralizing the population from whence a nation derived its mandate and materiel to wage war.[1110] The net effect, propagated in military aviation schools and a burgeoning doctrine of aviation during this time, was to emphasize these strategic roles over the tactical uses air power had traditionally filled. This version of 'air-mindedness' carried an implication that other uses of air power were an irresponsible waste of a valuable resource.

This type of rhetoric probably vitiated serious development of American CAS doctrine or procedures. It diverged from the paths taken by European allies like France, who focused on the observation and reconnaissance roles of air power.[1111] The approach stood in sharp contrast with Germany, which, under Colonel General Hans von Seeckt, pursued a different approach to

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[1105] See, e.g., Daniel R. Mortensen, "The Air Service in the Great War," in *Winged Shield, Winged Sword: A History of the United States Air Force*, ed. Bernard C. Nalty (Washington DC: Air Force History and Museums Program, 1997), 63-67.

[1106] Kennett, "Developments to 1939," 18.

[1107] James S. Corum, "Airpower Thought in Continental Europe between the Wars," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Phillip S. Meilinger (Maxwell Air Force Base: Air University Press, 1997), 152.

[1108] Ibid., 172.

[1109] Kennett, "Developments to 1939," 58.

[1110] Meilinger, *The Paths of Heaven: The Evolution of Airpower Theory*, xiv.

[1111] Corum, "Airpower Thought in Continental Europe between the Wars," 153.

military aviation. Germany, eschewing more extravagant Douhetian aims, developed *tactical* air forces to provide close air support, observation, and reconnaissance.[1112] In the U.S., public affairs stunts designed to make the American population aware of the *strategic* capability of air power, while forcing it to imagine the threats against which an independent air force alone could guard, succeeded in raising the public stature of the Air Service and eliciting bureaucratic-defensive responses from the Navy.[1113]

Some airmen displayed volatile thinking and rash behavior with respect to air power during the interwar period. Brigadier General Billy Mitchell advanced his ideas about attacking distant enemy lines of communication, supplies, and troop concentrations at the expense of the Navy, other Army officers, and his own military career.[1114] Bold claims, such as Captain Robert Webster's pronouncement that "[a]ir power is not a new weapon—it constitutes a new force, as separate from land power and sea power as each is separate from the other" contrasted with General John Pershing's assertion that "the military Air Force must be controlled in the same way, understand the same discipline, and act in accordance with the Army commander under precisely the same conditions as the other combat arms."[1115] Other hostility to the claims about air power capability and the need for air service independence came from Major General Hugh Drum, who spoke against "air operations not contributing to the success of the ground campaign," and Brigadier General Stanley Embick, who heaped vitriol on military aviation for its ineffectiveness in decisive missions, inability to hold territory, vulnerability to enemy attack, and dependence on land forces for protection.[1116, 1117]

Doctrinal debates were not the only force moving attention toward development of heavy bombers and away from pursuit and fighter-bomber aircraft suitable for CAS. As the reality of U.S. involvement in WWII loomed larger, industrial manufacturers favored the higher profits to be made from complex large bombers, encouraging the offensive strategies centered on precision bombing. This partnership between industry and the air service continued a trend started by Douhet, who was in league with industrial manufacturers of bombers in promulgating his strategic ideas.[1118]

The effective political alliances between airmen and manufacturers appeared in other arenas as well. Several prominent boards and commissions held throughout the interwar years

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[1112] Ibid., 171-72.

[1113] Peter R. Faber, "Interwar U.S. Army Aviation and the Air Corps Tactical School: Incubators of American Airpower," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Phillip S. Meilinger (Maxwell Air Force Base: Air University Press, 1997), 188-97.

[1114] Richard J. Overy, "Strategic Bombardment Before 1939," in *Case Studies in Strategic Bombardment*, ed. R. Cargill Hall (Washington DC: U.S. Government Printing Office, 1998), 21. Though he became notorious for his public enmity with the Navy and insubordination to his Army superiors in calling for air service independence, Mitchell's more reasoned arguments about military aviation had a central theme of defeat of the enemy's air capability. Beyond that, he believed air power should be used in massed formations to attack enemy capabilities.

[1115] Webster's comments are from Orientation (Lecture 1) to Air Force Course; Part 2; file no. 248.2017A; Air Force Historical Research Agency, Maxwell AFB. Comments by General John J. Pershing; 11; file no. 248.211-16F; Air Force Historical Research Agency, Maxwell AFB. Both Webster and Pershing are quoted in Faber, "Interwar U.S. Army Aviation and the Air Corps Tactical School: Incubators of American Airpower," 183-84.

[1116] Quoted in Overy, "Strategic Bombardment Before 1939," 33.

[1117] Memo: Aviation versus Coast Fortifications; Security-Classified Correspondence of the Joint Army-Navy Board, 1910-1942 (NM-84, Entry 284); War College Division and War Plans Division General Records; Records of the War Department General and Special Staffs, Record Group 165; National Archives Building, College Park.

[1118] For a description of Douhet's interests, see, *inter alia,* Stephen L. McFarland and Wesley Phillips Newton, *To Command the Sky: The Battle for Air Superiority over Germany, 1942-1944* Paperback ed. (Washington DC: Smithsonian Institution Press, 1991), 18-19.

served as a public dialogue among Congress, air advocates, and more traditional Army leaders. As Peter Faber described, the boards followed a two-steps-forward, one-step-back pattern: though board members frequently rebuffed claims about the primacy of air power in an independent role, the total effect of all the hearings was to raise the profile and prestige of strategic air power, building consensus over time that its unique capabilities made it essential to any future war efforts.[1119] Raising the profile of air power, however, only detracted from meaningful discussion about the appropriate tactics for its use in support of ground forces. In the U.S., as in the majority of countries during the 1930s, "neither ground nor aviation officers…did much to explore the command relationships for air support until the late 1930s."[1120]

Instead, services spent time engaged in ideological rhetoric about the uses of air power with a focus on preserving budgetary shares. These 'debates' often took the form of unilateral statements, with the two services apparently talking past one another. For example, while the Navy spent considerable time debating and arguing which service would have coastal-defense responsibility, the developing Army Air Corps did not give the matter much attention in its doctrine.[1121] Most often, though, the theoretical and practical discussions revolved around two competing ideas: central control for air assets by an overall theater air commander or the apportionment of organic air assets that could be controlled by the ground commander responsible for a given area of operations. The significant voices within the Army's variously monikered air services coalesced behind the former as an ideal for strategic employment of air forces, and the idea of central control under authority of a single airman advanced as the unifying idea for a new type of command and control of air power.

Pre-war efforts to create a system that would specifically accommodate CAS fell woefully short. Although General Dwight Eisenhower credited the maneuvers the Army practiced during the Louisiana and Carolina war games with preparing U.S. forces for the rigors of WWII, efforts to create an effective CAS command-and-control system for those exercises were by contrast counterproductive.[1122] The multi-layered system was intricate, time-consuming, and subject to the vagaries of WWII-era radio communication. To the larger Army, it proved unresponsive and wholly unsatisfactory. To airmen, it reinforced the idea that air power was better used on missions other than CAS. As Richard Hallion recorded, both air and ground commanders were "uneasy" with the Air Support Commands that centralized control of tactical attack aircraft under an organization with no ground-attack capability.[1123] Yet the unsatisfactory methods practiced during these war games were enshrined as doctrine with the publication of Field Manual 31-35 in 1942.[1124]

Congressional records from the era show that air power advocates had peddled their wares widely to many audiences, promising a host of new capabilities. Secretary of War George Dern,

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[1119] See, e.g., Faber, "Interwar U.S. Army Aviation and the Air Corps Tactical School: Incubators of American Airpower," 208-10.

[1120] Kennett, "Developments to 1939," 30.

[1121] As Pavelec notes, AWPD-1 does not mention coastal defense, nor do a host of other AAC publications dealing with support to the land force; Pavelec, "By Land and Sea," 306.

[1122] See David Syrett, "The Tunisian Campaign, 1942-43," in *Case Studies in the Development of Close Air Support*, ed. Benjamin Franklin Cooling (Washington DC: U.S. Government Printing Office, 1990), 157. Most of the missions undertaken by air assets were interdiction or traditional reconnaissance and observation. This tendency to mislabel as "CAS" other air missions is an enduring historical trend in the U.S. military.

[1123] Richard P. Hallion, *Strike from the Sky: The History of Battlefield Air Attack 1911-1945* (Washington: Smithsonian Institution Press, 1989), 223.

[1124] "Field Manual 31-35: Aviation in Support of Ground Forces," (Washington DC: War Department, 1942).

in a statement accompanying a House bill to expand the number of aircraft in the Army's G.H.Q. Air Force, described the nation's air capability as "a homogenous unit capable of operations in close support of large ground forces or alone against distant objectives either on land or water, and permits rapid air concentrations for defense of any of our frontiers."[1125] Dern's note anticipated neither the 'roles-and-missions' disputes to come with naval aviators nor the actual tension between command and control for close support and more distant missions, but it did reflect a guileless thrall with air power's capability that demonstrates the effectiveness of air advocates in the 1930s.

In sum, dedication to the idea that air power was a new kind of military force with great strategic potential took root during the interwar years. A hierarchy of importance for air force missions began to form that has endured, with slight changes, over eight decades. The flying force (first as part of the army and later as an independent force) prioritized, in order: 1) air superiority, 2) strategic attack, 3) interdiction, and 4) close air support.[1126] The last-place priority of CAS established a pecking order in Air Force priorities from which the mission has never ascended.[1127]

3. World War II

During World War II, as interwar thought patterns and rhetoric foreshadowed, the organizations that would eventually become an independent Air Force exhibited an initial predilection toward strategic bombing, air superiority, and interdiction at the neglect of direct support to ground forces.[1128] The Army remained the institutional master of its Air Corps and Air Forces. Reflecting the growing advocacy for independence by some of its air officers, it did not enter the war with a coherent strategy for support of ground forces by air power—anyone who would have thought about such ideas was likely more consumed with strategic bombing. Such direct tactical support was by then at best a "secondary mission" per the air power doctrine of the Air Corps Tactical School.[1129]

[1125] U.S. Senate, Committee on Military Affairs, *Report to Accompany H.R. 11140*, 74th Congress, 2d session, 29 May 1936, 7-8.

[1126] This order comes from "FM 100-20 (1943)." Many similar lists simply place CAS at the end of a list of three missions. In addition to the mission priority order cited, the controversial pamphlet declared air and ground elements "coequal" and prescribed centralized control of air forces by an air force commander. This development during WWII reflected the prevailing doctrine developed by Air Corps Tactical School cadre at Maxwell Field during the interwar years, which put the greatest stock in destroying enemy capability with a bombing campaign focused on enemy industrial capability. Publication of FM 100-20 represented a significant doctrinal coup for air power advocates and the entrenchment of assertions made in Air War Plans Division Publication 1 (AWPD-1, 1941). See Faber, "Interwar U.S. Army Aviation and the Air Corps Tactical School: Incubators of American Airpower," 224-25.

[1127] The rapid publication of new field manuals reflects the speed with which doctrine was evolving in the Army during the lead-up to U.S. involvement in WWII. Note the dates and subtle title changes in "Field Manual 1-5: Air Corps Field Manual; Employment of Aviation of the Army," (Washington DC: War Department, 1940); "Field Manual 1-10: Air Corps Field Manual; Tactics and Technique of Air Attack," (Washington DC: War Department, 1940); "Field Manual 1-5: Army Air Force Field Manual; Employment of Aviation of the Army," (Washington DC: War Department, 1943); "Field Manual 1-10: Army Air Force Field Manual; Tactics and Technique of Air Fighting," (Washington DC: War Department, 1943). All doctrinal changes had the net effect of strengthening centralized control, which had a complementary effect of making organic control of CAS assets more cumbersome.

[1128] Syrett summarized: "…while officially paying lip service to ground support operations, the AAC became preoccupied with strategic bombardment;" Syrett, "The Tunisian Campaign, 1942-43," 153.

[1129] Richard R. Muller, "The German, British, and American Experiences 1918-1941," in *Military Innovations in the Interwar Period*, ed. WIlliamson Murray and Allan R. Millett (Cambridge: Cambridge University Press, 1996), 180.

David Spires described tactical-air doctrine as evolving from a "trial-and-error experience" in North Africa.[1130] As in WWI, the U.S. was late to joint the conflict, so the first Allied army expressions of dissatisfaction over CAS came from the British. General Sir Alan Brooke, who commanded the withdrawal from Dunkirk and then served as Chief of the Imperial General Staff, expressed his disappointment over lack of air support he observed personally and advocated for organic control of air by ground commanders.[1131]

The growing pains that came with providing CAS to ground troops, neglected in peacetime, had to occur in the cauldron of battle.[1132] Rehabilitation of the Allies' CAS started in North Africa, where Britain's Western Desert Air Force (WDAF) worked out contracts for CAS with the army units fighting there.[1133] Unfortunately, the experiences gained in the early days of the North African campaign did not diffuse throughout the British military establishment. Though Prime Minister Winston Churchill gave orders to use the "Libyan model" for air employment because of the WDAF's effectiveness there, the subsequent Tunisian campaign revealed that the bulk of the RAF and British army did not understand these procedures.[1134] When the Americans and British collaborated during Operation Torch, they muddled through several months of dissatisfying air apportionment decisions and disputes.

Enabled by command-and-control adjustments to the North African theater that Allied leaders made at the Casablanca Conference, Air Chief Marshal Sir Arthur Tedder and Air Vice Marshal Sir Arthur Coningham received accolades for their efficient use of air power to support ground forces directly without neglecting theater-wide responsibilities. Coningham's personal efforts to make his tactical-air plans known throughout the operational area exhibited a proper balance of tact and novelty to ensure buy-in from senior commanders.[1135] The embarrassments of the German counterattack at Kasserine Pass while the Allies were midway through these organizational changes emphasized the imperative for a balance between responsive CAS and strategic air power.[1136] Tedder and Coningham were able to skillfully weigh these competing priorities as commanders of the North African Air Forces and North African Tactical Air Forces, respectively. They developed the concepts of "prearranged" and "on-call" CAS missions, as well as the widespread use of ground- and air-based forward air controllers.[1137] The success observed in the campaign gained wider acceptance for the centralized control of air assets. Rather than beat the drum of air-power ideology, Coningham's subordinate command pursued effective

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[1130] Spires, "Airpower and Ground Armies," 147.

[1131] Syrett, "The Tunisian Campaign, 1942-43," 158.

[1132] Mortensen argues that command and control difficulties for air power in North Africa in WWII are not as severe as other histories suggest. His counterpoint is that a lack of resources made many necessary missions impossible, and commanders simply did the best they could with limited resources to staunch losses until sufficient personnel and equipment could reach the theater. He correspondingly gives less credence to ground commander criticism or the unique abilities of Tedder, Coningham, et al; Daniel R. Mortensen, "The Legend of Lawrence Kuter: Agent for Airpower Doctrine," in *Airpower and Ground Armies: Essays on the Evolution of Anglo-American Air Doctrine 1940-1943*, ed. Daniel R. Mortensen (Maxwell AFB: Air University Press, 1998), 94-96.

[1133] Syrett, "The Tunisian Campaign, 1942-43," 159.

[1134] Ibid.

[1135] See, e.g., ibid., 174; Vincent Orange, "Getting Together: Tedder, Coningham, and the Americans in the Desert and Tunisia, 1940-43," in *Airpower and Ground Armies: Essays on the Evolution of Anglo-American Air Doctrine 1940-1943*, ed. Daniel R. Mortensen (Maxwell AFB: Air University Press, 1998), 34-38.

[1136] See Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 7.

[1137] Olive, "Abdicating Close Air Support," 6.

marking methods, communication techniques, and coordination mechanisms that made CAS effective when it supported theater priorities for offensive advance.[1138]

If the decisions of the Casablanca Conference solidified thinking that a responsive tactical air-ground system was paramount to success against German combined-arms prowess, they did not guarantee agreement about doctrine or the Allies' success for the rest of the war. Debates about the merits of tactical versus strategic air power again surfaced in command arrangements for Operation Overlord. The operation on continental Europe maintained separate command structures for Eighth Air Force and Britain's Bomber Command, the two interdiction-focused 'strategic' air forces in that theater. When they did provide direct support of landings and ground forces, the support came grudgingly, and it was accompanied by arguments that bombing against industrial centers remained the most effective use of heavy bombers.

Some specific challenges to the effectiveness of CAS in WWII operations merit mention because they appear in subsequent decades and American conflicts. A post-operations report about the 22 June 1944 attack on the Cherbourg peninsula asserted that fighter-bombers were superior to medium bombers for CAS roles because they had the capability to talk directly to ground forces with VHF radios.[1139] This exact obstacle to interoperability would remain in place for multi-role fighters through the first decade of the twenty-first century.[1140] Complaints about radio range and compatibility with ground radios appear in after-action reports, congressional hearings, and the informal records of aviation squadrons for every conflict since WWII.[1141]

A second telling vignette about the difficulty of integrating bombers into CAS operations comes from Operation COBRA in late July 1944. Face-to-face meetings between Generals Omar Bradley and Elwood "Pete" Quesada, the respective air and ground commanders, could not prevent errors in the bombing offensive that opened the operation, resulting in over 750 friendly-fire casualties. David Johnson blamed the debacle of air support in Operation COBRA on the Army Air Corps' failure to give CAS anything other than bottom billing in its priorities. At the root of the disaster were inadequate procedures for integrating heavy bombers into CAS missions. Bradley and Quesada both left the planning meeting for COBRA thinking they understood each other's intent for air operations, though Bradley later indicated he never intended to agree to routes of flight perpendicular to Allied troop formations, the root cause of errant bombs that led to so many friendly-fire casualties.[1142] Their mutual surprise was tragicomically similar to the

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[1138] See Syrett's account of Coningham's air plan for the March 1943 offensive against the Mareth Line; Syrett, "The Tunisian Campaign, 1942-43," 175-77. See also Coningham's effort to communicate to ground commanders how hitting certain distant targets would assist their operations later; Orange, "Airpower and Ground Armies," 12.

[1139] Letter, Brigadier General R.E. Nugent to Commanding General, Army Air Forces, Adv. AEAF; 168.161-3 (1943-1945); IRIS No. 24241; Air Force Historical Research Agency, Maxwell AFB AL.

[1140] Many Air Force and Navy aircraft did not receive radios capable of broadcasting on the VHF frequencies used by the Army until after 2005. However, military radio compatibility, even among ground forces, has remained a substantial difficulty since Vietnam; see Sandra I. Erwin, "Delays in 'Joint Tactical Radio' Program Cast Doubts on Future," *National Defense*, February 2007. http://www.nationaldefensemagazine.org/archive/2007/February/Pages/DelaysJoint2731.aspx. Service resistance to Defense Department guidance to create something as seemingly simple as a common radio network reinforces Ehrhard's observations that central guidance from exogenous defense executives is rarely effective when individual services are left to fund and implement the systems that must ultimately be fielded; see Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 564-67.

[1141] For just one example, see Sergeant Damron's remarks to Congressmen Evans and Pike; U.S. House of Representatives, Committee on Armed Services, *Hearing before the Special Subcommittee on Tactical Air Support*, 89th Congress, 1st session, 29 May 1966, 4648.

[1142] David E. Johnson, *Fast Tanks and Heavy Bombers: Innovation in the U.S. Army 1917-1945* (Ithaca: Cornell University Press, 1998), 216-17.

response from air and ground commanders that would follow Afghanistan's Operation Anaconda nearly 58 years later. In spite of this notable gaffe, Bradley and Quesada went on to form the "best air ground team in the European theater" and enjoyed "an extraordinary working relationship."[1143]

As Bradley and Quesada went on to greater success, the experiences of the XIX Tactical Air Command (XIX TAC) and General George Patton's Third Army at the end of the European campaign mark high water in air-ground cooperation, demonstrating how combat hones close support to a fine science. Major General Otto Weyland commanded the XIX TAC; his youth contrasted the grizzled Patton, but his doctrinal flexibility complemented the Army commander's slashing style. A good relationship developed quickly, with Patton and Weyland stretching their reduced assets to good effect in the soft underbelly of Europe. According to Spires, Weyland was willing to subvert the air power doctrine of FM 100-20 when necessary to support the fast progress of the Third Army, dispersing control of his groups and prioritizing CAS over interdiction at times.[1144] The Patton-Weyland partnership succeeded late in the European war, and benefitted from lessons learned at great cost in the early days of the North African campaign, the battle of Kasserine Pass, and the Italian peninsula landings. It defines a pattern of late-conflict competence and service harmony that continued through Korea, Vietnam, and resurfaced in modern COIN conflicts.

Inter-service rivalry appeared in WWII between the Air Force and the Navy over the proper use of air assets, though it was not focused on CAS. Instead, the two services bickered over the merits of strategic attack versus fleet protection, particularly in the Pacific theater. An illustrative dispute happened between Major General Millard Harmon and Vice Admiral Robert L. Ghormley, whom Harmon was tasked to support with air assets during the Solomon Islands campaign. After establishing initial cordial and cooperative inter-service relations, diverging theater priorities and more intense fighting frayed tempers. Harmon, embracing contemporary Air Corps doctrine, favored striking strategic targets with B-17s, complaining about Ghormley's "misuse" of the aircraft to conduct reconnaissance for fleet protection. Though Admiral William Halsey relieved Ghormley of command and installed a more flexible commander, the Pacific disputes reached General of the Army Air Henry "Hap" Arnold and Fleet Admiral Ernest King, demonstrating the magnitude of the dysfunction.[1145]

Overall, WWII served as a kind of experimental testing and proving ground for ideas about the application of air power. Across a large number of theaters marked by different strategic and tactical realities, lacking any thorough comparative study, advocates could claim validation for almost any ideas about the best use of combat aviation. No single idea about air power efficacy prevailed in analysis of the conflict. Those firmly wed to the idea of centralized control could claim victory arrived more slowly in Europe than it would have otherwise since some available air power had been parceled out among ground commanders. Ground commanders who experienced a lack of support claimed that penury in allocating tactical-air support was an unconscionable burden on ground troops.

[1143] Hughes, *Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II*, dust jacket blurb, 157. In many ways, Quesada's WWII career is a metaphor for the wartime rise of tactical air power. His subsequent snubbing by Air Force Chief of Staff Hoyt Vandenburg, who also stripped Quesada's Tactical Air Command of "most of its planes and pilots," also accurately represents the treatment it receives in peacetime; see ibid., 304-06.

[1144] Spires, "Airpower and Ground Armies."

[1145] Trest, *Air Force Roles and Missions: A History*, 100-02.

Because of the war's vast scope and the ultimate Allied victory, advocates of many conflicting claims about the efficacy of a certain approach to air power could argue for the supremacy of their ideals. However, the abrupt end of the war in the Pacific theater with two nuclear bombs dropped on Japan shoved the balance of post-war air power thinking about air power firmly into the strategic realm at the cost of more detailed thinking about close support. General Carl A. Spaatz, finishing the war as the Army Air Forces Commander, promised General of the Army and Chief of Staff Dwight Eisenhower continued CAS support in the form of a dedicated Tactical Air Command (TAC).[1146] Though he established the command in 1946, with Air Force independence came a loss of focus on the mission it was to perform. After a quick three years, armed conflict in Korea would see the matter receive renewed attention.

Cameo for UAV Aviation: The Predecessors of UAVs
While aircraft have been performing different types of ISR since the first balloons flew over European battles in 1794, unmanned aviation lagged behind the version with a person at the controls.[1147] Ehrhard's comprehensive history of unmanned aviation recounts that the first practical offensive unmanned air power debuted during WWII. The Nazi-developed V-1 "buzz bomb," while a one-way vehicle, used aerodynamic lift and tackled the problems of positioning and navigation that proved so vexing to subsequent developers of UAVs. The V-1, inaccurate though it was, caused over 6,000 deaths in Britain and threatened Allied unity while civilian and military leadership argued over how many sorties to devote to attacking launch sites. The *Mistel* was an explosive-laden, unmanned aircraft attached to a manned aircraft. It was flown to a target area, released, and then flown to impact by remote control from the delivering *Luftwaffe* pilot's cockpit. It also addressed a major technological challenge to UAV operations: control by remote datalink.[1148]

American efforts to develop unpiloted attack aircraft and target drones demonstrated great enthusiasm and salesmanship from advocates but did not make substantial technical progress through the same time period. Although WWI saw substantial effort to develop the unmanned *Bug* "aerial torpedo," Ehrhard recorded that "the Great War ended and all worked stopped," only to be revived again with repeated failure during WWII.[1149] Interwar developments included more radio-controlled flying bombs and a drone for aerial target practice. Unmanned craft never proved accurate enough to serve as more than erratic terror weapons, though, and the U.S. did not field a true UAV system in combat. Enthusiasm for the potential of unmanned systems did retain momentum after the war in the development of cruise missiles.[1150] Combined with the focus on nuclear weapons and the doctrines of deterrence and coercion, these systems would become prominent in military thinking and national strategy. The use of UAVs for close support of battlefield operations, however, would have to wait until the Vietnam conflict.

[1146] Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 15.

[1147] Though the U.S. Air Force Academy indoctrinates cadets with the knowledge that the Montgolfier brothers flew a "reluctant rooster, a sheep, and a duck" before sending the young physician Jean-Francois de Rozier airborne, this 'unmanned' flight was a trivial instance that didn't presage further development; "The Beginnings of Flight," in *Contrails: The Air Force Academy Cadet Handbook* (Colorado Springs: U.S. Air Force Academy Press, 1992), 37.

[1148] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 677-78.

[1149] Nikola Tesla's gyroscope, a key innovation that enabled the limited progress unmanned vehicles did make, became a key component of instrument flight systems for manned aircraft; ibid., 662-64.

[1150] Ibid., 662-86.

4. Post-War Neglect

CAS's march to the inter-service 'seams' of neglected military capabilities accelerated after the successes achieved during wartime urgency. No service claimed the mission with enthusiasm or otherwise gave it much attention after hostilities ended. Inter-service conflict prior to the Key West Agreement marked the months following the end of World War II. Both the Navy and the newly independent Air Force emerged from the war thoroughly convinced of the utility of aviation. The Navy had come to see carrier aviation as the "premier striking arm" of its fleet.[1151] The Air Force, keeping with doctrine that had developed leading up to the war and had been fulfilled—in the interpretation of many—in the explosions over Hiroshima and Nagasaki, saw great war-winning potential in centrally controlled strategic bombing, and placed most of its resources in the procurement of large intercontinental bombers.[1152, 1153] The Air Force immediately became concerned about a perceived encroachment on its nuclear mission.[1154]

In the post-war era, the new DoD organized according to its three services' primary domains of land, sea, and air; demobilization's accompanying scarcity of funding intensified inter-service rivalry.[1155] The dynamics of defense unification were complex, but the services' positions fell into three primary lines. The Army supported unification because it wanted representation and bureaucratic clout that it otherwise feared losing when the size of the land force diminished after the war. The Army Air Forces supported unification, seeing reorganization as the quickest way to achieve a long-standing goal of independence. The Navy opposed the move, fearing it would lose more of its coveted autonomy. The Navy's specific concern relevant to air power was that it might sacrifice its newfound carrier aviation capabilities to the independent air arm or lose a range of capability to narrowly defined tactical limits on naval air power.

Neither CAS nor UAVs witnessed significant development in the brief respite between WWII and the Cold War's first flare-up in Korea. Strategic nuclear weapons delivered by heavy bombers were the bread and butter of the post-war Air Force. Johnson observed that the Army "struggle[d] to justify its existence in the context of a nuclear world largely dominated in the American defense structure by an independent U.S. Air Force," and created Pentomic Divisions that centered around tactical nuclear war in Europe.[1156, 1157] The Navy vied to wrest more authority to pursue 'tactical' air power, but as a means of striking naval targets such as submarine holding pens. CAS and close support of ground maneuver warfare, though assigned to

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[1151] Barlow, *Revolt of the Admirals*, 292.

[1152] Ibid., 291.

[1153] Trest, *Air Force Roles and Missions: A History*, 118.

[1154] Warren A. Trest and George M. Watson, Jr., "Framing Air Force Missions," in *Winged Shield, Winged Sword: A History of the United States Air Force*, ed. Bernard C. Nalty (Washington DC: Air Force History and Museums Program, 1997), 418.

[1155] Trest, *Air Force Roles and Missions: A History*, 117.

[1156] Johnson, *Learning Large Lessons*, 228.

[1157] 'Pentomic divisions' were the name for infantry and airborne divisions under an organizational scheme in effect from about 1950 through 1963. The short-lived concept created divisions comprised of five battle groups, which were in turn consisted of five companies—it created more divisions with less manpower and purported to account for the possibility of nuclear weapons in war. It eliminated the battalion level of command within the affected service branches. For the "Heroic," but misguided, intentions of the Army's "New Look" atomic battlefield doctrine in the 1950s, see Brian McAllister Linn, *The Echo of Battle: The Army's Way of War* (Cambridge: Harvard University Press, 2007), 173-76.

the Air Force as a primary mission, suffered neglect in a major administrative shuffle and the emerging threat of nuclear war.[1158]

5. *The Korean War*

The Korean conflict from 1950-1953 was a confrontation between superpowers, but exhibited a combination of 'small' and conventional war characteristics. It was not the large conventional or nuclear war the American defense establishment expected to fight, however. Predictably, the Air Force's preparations for war optimized its ability to deliver nuclear weapons, but did not reconstruct the successful close support systems of WWII for ground forces.[1159] Even TAC, ostensibly dedicated to support of ground forces, gravitated toward the nuclear mission during the Korean conflict. Ian Horwood pointed out that TAC adapted fighter-bombers to carry small nuclear weapons in 1950.[1160] Gary Ohls recounted the unsuitability of the F-80 shooting star in the early days of the Korean conflict, which meant that the "only substantial air support available to U.S. and ROK ground forces" came from the Navy's carrier-based assets.[1161]

According to David Isby's summary of CAS history, in Korea "the Army was not satisfied with the level of Air Force close air support."[1162] At the beginning of the war, in 1950, General Lawton Collins filed a complaint with the Joint Chiefs of Staff regarding Air Force CAS negligence.[1163] This action, along with vocal criticism from Army General Edward Almond, led to a defensive Air Force public relations campaign lasting throughout the conflict. The centerpiece of that campaign was a voluminous report of the performance of the Far East Air Forces in Korea. Produced by Major General Glen Barcus, the report emphasized CAS successes. Professor Barton Leach assimilated the Barcus report and other CAS studies for the Air Staff in advance of announced congressional hearings about Air Force support to the Army. One impetus for the myriad of reports was Air Force suspicion that "a coalition of agencies [were] putting on pressure to further split up U.S. air power."[1164] The Army produced conflicting reports and evaluations, and the Far East Command produced a report that demonstrated the differences between centrally controlled CAS and organically apportioned CAS.

The anticipated congressional hearings did not materialize at that time—perhaps because they had the intended effect of spurring the services to visible action—but the theater command's report raised a troubling comparison with the maritime services. In general, Marines were extremely satisfied with their organic CAS support. The Marines also first demonstrated the utility of rotary-wing air mobility and informal use of armed helicopters for CAS.[1165] This caused many Army leaders to call for a similar air-ground system and greater organic Army air power; Air Force advocates redoubled criticism of the Marine Corps materiel and air control system as either wasteful or too exceptional for replication. Pressured by the public dialogue, Air

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[1158] See Functions of the Armed Forces and the Joint Chiefs of Staff ("Key West Agreement"); Combined Arms Research Library, Washington DC.

[1159] Conrad C. Crane, *American Airpower Strategy in Korea, 1950-1953*, ed. Theodore A. WilsonModern War Studies (Lawrence, KS: University Press of Kansas, 2000), 175-76.

[1160] Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 19.

[1161] Quoted in Douglas V. Smith, *One Hundred Years of U.S. Navy Air Power* (Annapolis: Naval Institute Press, 2010), 271.

[1162] Isby's work appears as a written statement within U.S. House of Representatives, Committee on Armed Services, *Roles and Missions of Close Air Support: Hearing before the Investigations Subcommittee*, 101st Congress, 2nd session, 27 September 1990.

[1163] See Crane, *American Airpower Strategy in Korea*, 60.

[1164] Ibid.

[1165] Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 26.

Force Chief of Staff General Hoyt Vandenburg promised his service "would not neglect close air support," but lamented the failure of both services to create "trained staffs, controlling agencies, or communications systems capable of making the doctrine work."[1166] The Marine Corps' operational scheme in Korea, repeated in all conflicts in which it has since participated, involved taking control of a specific part of the theater of conflict and operating its air assets independently of any other senior air component commander. The Army viewed the glowing reports the Marines gave their dedicated CAS assets with envy. The Air Force in turn increased the number of ground-based forward air controllers collocated with Army units in the field.[1167]

During Korea, the influence of special defense boards, established to look at particular aspects of military aviation, had an impact on shaping doctrine and materiel procurement for CAS. The board headed by Major General Hamilton Howze had the first prominent impact during the era, offering radically enlarged visions of air mobility for the Army and calling for organic control of dedicated fixed- and rotary-wing CAS assets.[1168] The Air Force protested in kind by forming a tactical aviation board under General Gabriel Disosway. The Disosway report acknowledged the need for better CAS and air mobility procedures, proposing Air Force-centric means to achieve both. The Howze-Disosway controversy led to further defense-establishment debate, combat testing of competing air power schemes, and eventual congressional hearings. In the end, its major outcome was to validate and firmly entrench the concept of Army air-mobility—and, later, CAS provided by rotary-wing aircraft—in the form of air assault divisions.[1169]

Korea witnessed the first instance of the Army using indirect pressure by example to get the Air Force to acquire and operate (against its preferences) an aircraft as a CAS platform. During the Korean War, the Army aircraft inventory quadrupled, with a third of the expansion coming in the form of helicopters.[1170] While the Air Force's prevailing ideas already favored fast-moving, multi-role fighter-bombers that could perform CAS, interdiction, or other missions under the tactical air control system (TACS), the Army believed these to be too fast to identify close-range targets and provide precise CAS. Ironically, the speed of the faster aircraft allowed them to be deployed further from troop concentrations, adding to the perception that the air component would not allocate them for CAS. The Army's procurement of the O-1 *Bird Dog*, along with that of the Marines, probably forced the Air Force's acquisition and operation of an aircraft it might not have otherwise favored, leading to its operation of the O-2 and OV-10 in Vietnam.

Though procedures improved and CAS aircraft inventories grew during the Korean War in part because of inter-service rivalry and competitive need to perform as well as the maritime component, an Air Force renaissance in thinking about CAS or its relative priority did not occur. The Air Force disbanded its only remaining airborne forward air controller group, the 6174th Tactical Control Group, in 1957.[1171] Highlighting an intransigence to learn from the experience

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[1166] Olive, "Abdicating Close Air Support," 8.
[1167] Horwood describes the satisfaction Army officers expressed upon receiving Marine CAS for the Inchon landings and defense of the Pusan perimeter; Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 16.
[1168] U.S. Army Tactical Mobility Requirements Board Final Report; U.S. Army Center for Military History; Department of the Army, Fort Bragg.
[1169] *Interservice Rivalry and Airpower in the Vietnam War*, 50-56.
[1170] Trest, *Air Force Roles and Missions: A History*, 149.
[1171] Hasken, "A Historical Look at CAS," 30. The capability to provide ground-based forward air controllers (GFACs) did not disappear after Korea, however. As Col. (ret.) Louis Bochain put it, "The U.S. Air Force has had GFACs continuously since Korea." He described, however, that the functional alignment had "devolved to a

that was common across all services, Secretary of the Air Force Harold Finletter evaluated Korea as "a special case" with respect to air power, concluding there was little for the service he led to learn from the conditions of battle.[1172]

6. Vietnam

General William Momyer made an observation that "the tactical air control system must be very responsive" in its provision of CAS, repeating similar conclusions reached during WWII and the Korean conflict.[1173] In fact, although the Air Force fielded as many as eight hundred forward air controllers to coordinate CAS at any given time, the need for responsive tactical air-control measures did not become a significant part of Air Force doctrine after Vietnam, which is one reason the 'lesson' continued to be 'learned' in subsequent conflicts.[1174] The opening years of the conflict saw a continuation of a now-familiar four-service doctrinal battle waged over air power. The Air Force attempted, and failed, to wrest control over all air assets in the Vietnam theater, an area of responsibility that Horwood pointed out was itself hard to identify precisely because of the overlapping responsibilities and authorities of the various U.S. commands located there.[1175]

Tactics for CAS, practiced primarily in the southern part of the theater with fewer opposing air defenses, developed as the war progressed. The involved parties were army ground forces, FACs who lived and worked with the Army while flying O-1s and O-2s, and CAS fighter aircraft that dropped unguided bombs and napalm. The F-100 was one of the few fighters with a gun at the time, and could strafe targets if FACs requested. The fast fighters, optimized for tactical nuclear delivery under threat of advanced air defenses, were not well suited for CAS. They had relatively short loiter times, and the speed at which the aircraft moved meant it was difficult for a pilot to keep a target in sight after the FAC identified it. A lack of weapons optimized for precision meant that CAS attacks often missed their targets. As Corum and Johnson wrote, "bombing civilians is ineffective and counterproductive" when waging COIN warfare, and both the weapons and strategy of Vietnam guaranteed it happened with frequency.[1176] Some technological innovations occurred during the Vietnam War, notably high-drag weapons that allowed pilots to drop weapons very close to targets yet still escape the blast and fragmentation that blossomed beneath them as they climbed back to altitude. As C.R. Anderegg wrote, though, "the CAS mission found itself shortchanged by the fighters of the nuclear era…the fighter crews did the best they could with what they had, but they were woefully equipped and badly trained."[1177] The shortcomings of fighter aircraft also spurred the development of the AC-130

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detachment of Air Force personnel" who worked at division headquarters, with all air liaison officers (ALOs) working at tactical air control wings, not at the Army divisions to whom their support was promised. "It was a terrible model…that's why decisions were made at the four-star level to form these air support operations squadrons [ASOSs] at each of the Army divisions." Bochain Interview, 24 January 2014.

[1172] Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 19.

[1173] William W. Momyer, *Airpower in Three Wars* (Washington DC: U.S. Government Printing Office, 1978), 338. Momyer would have recognized the same lessons in his experiences as a young Colonel with the Western Desert Air Forces and 33rd Fighter Group (Tunisia) during WWII. He did not serve in Korea between 1950 and 1953, though he later commanded the 8th Fighter-Bomber Wing (1954) and all U.S. air forces in Korea as commander of the 314th Air Division (1955).

[1174] Hasken, "A Historical Look at CAS," 34.

[1175] Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 64.

[1176] Corum and Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists*, 428.

[1177] Anderegg, *Sierra Hotel: Flying Air Force Fighters in the Decade After Vietnam*, 15.

gunship and Army attack helicopters, platforms with loiter time and fire control systems that could keep small and fleeting targets in view.[1178]

The unpreparedness for CAS in Vietnam did not go without comment from exogenous levels of the defense establishment. Congressional hearings continued to impact inter-service relations. CAS was a hot topic, and the Army's dissatisfaction with the support it received from the Air Force came into sharp relief several times. A 1966 hearing before a special subcommittee on tactical-air support used testimony from Army personnel who had served in Vietnam to criticize slow response times, a dearth of CAS aircraft, and a cumbersome liaison process. The massive report from the hearing pointed out the irony of the Air Force reliance on Army and Navy platforms for its close-support attack assets. The hearing closed with General Bernard Schriever, commander of Air Force Systems Command, advocating for the acquisition of a COIN-specific light attack and reconnaissance aircraft (LARA), a concept first promoted by the Marines, that would become the OV-10.[1179] Here is the second instance of indirect ground-service advocacy for a single-role CAS platform. Having realized both a preference against increasing its fixed-wing inventory, as well as defense department and congressional inclination to leave those missions with the Air Force, the Army and Marine Corps adopted a strategy that involved highlighting failures of the extant air-ground system while obtaining organic platforms to make up shortfalls. This pressure spurred the Air Force to adopt CAS-specific platforms that conformed to ground commanders' preferences. Inter-service championing of the OV-10 *Bronco* probably led to Air Force acquisition of the platform, ensuring that fast, multi-role jets would shoulder only some of the close-support load.

A concluding observation about the Vietnam conflict is Dennis Drew's note that the Air Force's Airmen "may have been suffering from collective intellectual 'battle fatigue.'"[1180] All the services exhibited similar phenomena. As Nielsen and others observed with respect to the Army, the doctrinal lessons learned at high cost during what was mostly a COIN conflict—with more conventional facets appearing at its close—found little retelling in the Air Force after Vietnam.[1181] Along with its sister services, the Air Force longed to forget the humiliations of Vietnam and instead focus on the specter of high-intensity conflict with the Soviet Union.

UAVs Enter Combat

UAVs made their first sustained and substantial contribution to battlefield ISR in East Asia as U.S. involvement in Vietnam increased. Ehrhard documented the first flights of the *Lightning Bug*, a renamed version of the *Firefly* UAV, which first operated in August 1964 under the cover of Nationalist-China markings as it surveilled Mainland China from the U.S. base on Okinawa. Saddled with limitations common to any experimental system, it deployed forward to Vietnam in October 1964 to better contribute to theater reconnaissance—a move that also happened to give

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[1178] Hasken, "A Historical Look at CAS," 34.

[1179] *Hearing before the Special Subcommittee on Tactical Air Support*, 4846. General Schriever reflected a stereotypical Air Force ignorance in saying "I don't know that we have an official definition" when asked for the definition of "limited war." The publishers of the report appreciated the irony, providing an official definition from joint doctrine adjacent to Schriever's answer and noting that it was "identical" to the one shown in Air Force Manual 11-1, dated 7 December 1961; ibid., 4842.

[1180] Dennis M. Drew, "Air Theory, Air Force, and Low Intensity Conflict: A Short Journey to Confusion," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Phillip S. Meilinger (Maxwell Air Force Base: Air University Press, 1997), 352n.

[1181] Nielsen, *An Army Transformed: The U.S. Army's Post-Vietnam Recovery and the Dynamics of Change in Military Organizations*.

it a more direct path over sensitive Chinese sites. In spite of shoot-downs that became a matter of public media record, the drone flew 160 reconnaissance sorties in 1965 and 1966. The focus of the *Lightning Bug*, as that of the later-developed D-21 drone, was strategic-missile and nuclear-site reconnaissance.[1182]

Successors to the *Lightning Bug* began to exhibit the paradoxical, development-inhibiting high costs of UAVs imparted by their incubation in the well-funded 'black world.' Surveillance satellites that achieved equivalent strategic imagery without committing the discourtesy of atmospheric overflight began to prevail as the ISR system of choice. However, after North Korea shot down a manned U.S. EC-121 electronic intelligence collection aircraft in 1968, the demand for the *Combat Dawn* SIGINT UAV increased. Again, growth of satellite capability for the same mission obviated need for the UAVs.[1183]

General John D. Ryan of the Strategic Air Command (SAC) directed a change in the use of *Lightning Bug*. Though the UAV was initially used for high-altitude strategic reconnaissance, Ryan directed creation of a model capable of navigating at low-altitude to conduct bomb damage assessments under low overcast cloud decks. The resultant new project and large-production UAV was the *Buffalo Hunter*, and it proved invaluable to validating bomb damage assessments conducted at low-level under overcast skies during the Linebacker operations that closed out U.S. involvement in Vietnam. As the tactical utility of UAVs became apparent, the repetitive debate about centralized and organic control arose in this area as well, with the Military Assistance Command for Vietnam (MACV) requesting more direct control while SAC insisted that centralized control was the most efficient use. Ehrhard attributed this to a larger TAC-SAC rift that witnessed claims from TAC, which "absorbed the brunt of wartime operations," against the resources SAC prioritized for thermo-nuclear deterrence.[1184] The debate—and the compromised balance of missions worked out as the conflict wound down—echo the same characteristics that would play out in Army-Air Force competition for UAV resources three decades later. From this point forward in history, debates about CAS and UAV-ISR support exhibit the same kinds of arguments. The efficiency, survivability, and speed of high-performance, high-cost, multi-role, and strategic platforms vied against the reliability, proximity, and dependability of more-plentiful, lower-cost, slower, dedicated platforms. More generally, the UAV command-and-control debate comprises just one loop in what Stephen McNamara described as the centralized-versus-organic "Gordian knot" of air power.[1185]

<p style="text-align:center">*****</p>

From WWI through Vietnam, fresh combat experience taught old lessons about CAS every time a conflict arose that involved air power or the use of combined arms. When wars emerged that put Army or Marine Corps troops in close contact with the enemy, the pendulum of joint CAS competency swung, with effective air integration growing commensurately with time spent on the ground effort. But attention to and proficiency at this critical battlefield capability repeatedly fell prey to the enduring service battles over roles and missions. The historical trends show that the need for close cooperation—in spite of what prevailing political moods or theoretical trends might suggest—never dies, but that the quality of that cooperation is continually at risk.

Despite some pitched battles over CAS, organic aircraft, and service roles and missions, the Army and Air Force enjoyed a period of singular cooperation after Vietnam. Harold Winton

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[1182] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 116-21.
[1183] Ibid., 130-33.
[1184] *Air Force UAVs: The Secret History* (Arlington: The Mitchell Institute for Airpower Studies, 2010), 26-27.
[1185] See McNamara, *Air Power's Gordian Knot.*

noted that the partnership and cohesion between the Army and Air Force in evidence from the end of the Vietnam war to Operation Desert storm were predicated on: 1) shared focus on the NATO defense mission (see Chapter 3), 2) cooperation between service leaders, 3) the rise of fighter pilots to leadership positions in the Air Force, and 4) clear vision from the Army about the nature of future war that captured the attention of Air Force leadership.[1186] As discussed in Chapter 3, the context for cooperation was an anticipated conflict that never occurred, so the services' proving ground for the validity of their cooperation came in rebuffing the Iraqi invasion of Kuwait in late 1990. The record of Operation Desert Storm would reveal several weak points in the assumptions of AirLand Battle that made it unacceptable to continue as an organizing principle. It also demonstrated with some clarity that in pursuing deep battle principles both the Army and Air Force had lost the CAS confidence and competence gained at dear cost in Vietnam.

7. Close Air Support Tests in the 1990s
a) Iraq: Operation Desert Storm
The cyclic debate about air power's primacy as an independent form of military power emerged with conspicuous attention at least twice in the 1990s. Its effects received superlative labels following the ejection of Iraq from Kuwait and the destruction of significant parts of the Iraqi military in 1991's Operation Desert Storm. Although air power performed with success during the conflict, validating many of the principles of battlefield air interdiction (BAI) that had been central to AirLand Battle doctrine, it did not incorporate 'real' CAS to any significant degree. The capability went unexercised mostly because of doubts and insecurities among the service components that they could execute the close coordination necessary to bring air power to bear against the enemy without significant friendly-fire losses. At any rate, the need for extensive CAS did not emerge; the enemy force was simply overwhelmed to such a degree that pitched frontal battles requiring air support to change the tide never occurred. Leaving earlier discussion of this CAS experience stand, the question of UAV performance in the first Gulf War next merits attention.

UAVs through Desert Storm
Although UAV development had shown promise around the world, notably in combat for Israel through the 1980s, it did not make a quantum advance after Vietnam in the U.S. military. During the period, the Army was the lead agent for UAVs, and deployed the *Pioneer* system to Iraq with mixed results. Ehrhard contrasted rave reviews of the *Pioneer* system's forty-six missions with the reality of serious operational limitations—chiefly weather—that kept it from being of great use in the ground war.[1187] Ehrhard interpreted the Army's post-operational review of the system's performance as a judgment that "it did not want a system like *Pioneer*," and records that the Army lost control of all UAV programs to the Defense Department before it could internally confront or counter this conclusion.[1188]

The maritime services had slightly better luck with *Pioneer*. The Navy and Marines were faster to deploy the system, and brought it to the theater in greater quantity. In addition to serving as a platform for naval gunfire observation, happenstance observation of enemy movement led to its use as an *ad hoc* surveillance platform, directing fires against enemy troop concentrations and

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[1186] Winton, "Partnership and Tension," 111.
[1187] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 293-94.
[1188] Ibid., 295.

monitoring the path of advancing Marine units.[1189] Iraqi soldiers on Faylaka Island surrendered to a low-flying *Pioneer* shortly after being pounded by fire from the U.S.S. *Wisconsin*, a vignette that worked its way into every subsequent naval UAV program briefing.[1190] The Marines developed similar enthusiasm for their unmanned platforms, finding them useful for enemy observation and targeting that kept pilots out of harm's way. However, in the years after Desert Storm, maritime enthusiasm for the systems waned as well. The Navy sacrificed their systems in the wake of budget cuts; Marine ground units found out that they, like the Army, did not enjoy the maintenance and airspace-control headaches associated with operating aviation assets and accordingly transferred control to their air wings.[1191] Ehrhard was prophetic in anticipating that "only the test of war will reveal whether support to the ground units would be as responsive as promised."[1192] Echoes of Spaatz's original broken promise to Eisenhower about CAS reverberated, this time in the realm of UAVs.

b) After Desert Storm

In the years after Desert Storm, the characteristic U.S. post-conflict trends with respect to CAS emerged. The Army became vocal in calling for the Air Force to create a new dedicated CAS aircraft to replace the A-10, standing against the Air Force plan to modify 350 F-16s for the mission. The National Defense Authorization Act for 1991 went so far as to include a provision to transfer A-10s to the Army, but both services requested rescission of the order and agreed that CAS should remain an Air Force responsibility.[1193]

The Air Force's tendency to distance itself from CAS after a conflict, seeking to concentrate on its higher-priority missions, also surfaced. In 1994, then-Air Force Chief of Staff General Merrill McPeak gave a somewhat startling presentation to a congressional roles and missions commission.[1194] McPeak listed four air force roles in a "theater of operations" in priority order: 1) air superiority, 2) strategic attack, 3) interdiction, and 4) close air support. The position of CAS on the list is notable but not inconsistent with the service's historical views.[1195] After describing difficulties observed in Desert Storm over the fire support coordination line (FSCL), making an argument that only the Air Force and Navy should maintain "deep attack" capabilities, and attacking the Marine Corps for unrealistic accounting of deep attack sorties as "CAS" to justify organic control, McPeak offered a cost-savings proposal. In the light of "declining need for CAS," he recommended the "elimination of CAS as a primary responsibility for the Air Force and Navy."[1196] In his proposal, the Army and Marine Corps would assume CAS

[1189] Ibid., 369.

[1190] Ibid., 371(n).

[1191] Ibid., 378.

[1192] Ibid., 380.

[1193] Ronald O'Rourke. "Persian Gulf War: Defense-Policy Implications for Congress." Washington DC: Congressional Research Service, 1991, 21-22.

[1194] McPeak's suggestion was not unsolicited; he made these comments to a Senate Budget Committee looking for "options to eliminate forces and activities which are duplicated in more than one service;" see Frances M. Lussier. "Options for Reconfiguring Service Roles and Missions." Washington DC: Congressional Budget Office, 1994.

[1195] The omission of both airlift and ISR are anachronisms from that era that would not likely happen again in current Air Force communications; space power would also certainly be included on any list. McPeak's presentation included an appeal for the Air Force to be designated executive agent for space in DoD; McPeak. "Roles and Missions Presentation," 1994, 196.

[1196] McPeak's presentation helpfully included epigraphs from authors who seemed to indicate that CAS was not effective when compared to interdiction, even selectively emphasizing their words to alter the meaning of the quotations; see ibid., 103, 14.

as a primary function, the Army would absorb all Air Force Tactical Air Control Party (TACP) and Air Support Operations Squadron (ASOS) equipment, and the A-10 would be retired.[1197,] [1198] The Air Force and Navy would retain a backup CAS role using multi-role aircraft.[1199]

Although none of McPeak's slash-and-burn proposals for dedicated-platform CAS materialized, such a presentation from a service chief again raised the perception of Air Force reluctance—if not outright apathy—toward performing the mission. That McPeak was able to complete such a presentation without strong legislative censure offers evidence of how some congressional priorities had changed since WWII. It is difficult to imagine Senator Stuart Symington allowing McPeak to finish this presentation without a lengthy interrogation. Symington, a former Air Force secretary, grilled most senior witnesses about the Key West Agreement at a 1971 hearing on CAS, reminding them of his role in drafting it and leaving no confusion that he believed in the enduring utility of the agreement.[1200]

c) Close Support in the Balkan Conflicts

McPeak's ideologically turbulent years as Chief of Staff did not yield roles-and-missions changes as radical as his oft-ridiculed changes to the Air Force uniform, but CAS capability showed few signs of improvement during this era.[1201] Typical patterns of CAS neglect became apparent again in 1995 and 1999 in Serbia and Kosovo, respectively. Public debate, fueled by inter-service public affairs campaigns, followed the European conflicts of the mid- and late-1990s in which NATO intervened. Conflicts in Bosnia, Serbia and the former Yugoslavia again provided a chance to highlight the 'stand-alone' capabilities of air power. The conflicts witnessed little enthusiasm to committing ground troops, including an explicit presidential dismissal of that option in Kosovo.[1202] The climate was ripe for its champions to trumpet the accomplishments of air power and, in extreme cases, to call political successes achieved in the Balkans products of a "solo" airpower effort.[1203]

Despite the Air Force "arrogance" fueled by 1990s rhetoric about air power as a strategically unique capability, a notable example of personal leadership emerged to keep attention focused on CAS capabilities.[1204] General Michael Ryan's effort to improve CAS

[1197] TACPs provide a specially trained and equipped capability to interface with CAS assets. A "party" may consist of more than one individual, including observers and communications specialists, but will have at a minimum an individual trained as a terminal air controller who has authority to authorize close air support weapons employment.

[1198] ASOSs were, and remain, the Air Force units functionally aligned with Army maneuver units. In general, each Army division has an ASOS geographically collocated at its peacetime posting. ASOSs are responsible for establishing Air Support Operations Centers (ASOCs) and other manifestations of the air-ground command and control system during armed conflict.

[1199] McPeak. "Roles and Missions Presentation," 1994, 29, 35, 55, 105-21.

[1200] See, e.g., Symington's remarks during Assistant Secretary of Defense David Packard's testimony; *Hearing before the Special Subcommittee on Close Air Support*, 4.

[1201] See, e.g., Peter Grier, "In Search of the Perfect Uniform," *Air Force Magazine*, January 2009, 63.

[1202] President William Clinton's public statements may have belied ground invasion plans developed prior to Yugoslav President Slobodan Milosevic's capitulation on 9 June 1999 following a 78-day air campaign; see Dana Priest, "Kosovo Land Threat May Have Won War," *The Washington Post*, 19 September 1999. http://www.washingtonpost.com/wp-srv/national/daily/sept99/airwar19.htm.

[1203] Byman and Waxman's article to *dispute* claims of a solo air power victory is among the best evidence that such sentiment existed; see Daniel A. Byman and Matthew C. Waxman, "Kosovo and the Great Air Power Debate," *International Security* 24, no. 4 (2000).

[1204] "Arrogance" was a common term used by three Air Force flag officers interviewed—all wished to remain anonymous on this point. Two agreed the Air Force was especially of doctrinal conceit during the 1990s, though one was careful to point out it was merely a perception in the eye of Air Force critics, especially the Army.

capability arose in part from his experiences as the commander of NATO's southern air forces from September 1994 to April 1996 and his subsequent assignment as the commander of U.S. Air Forces in Europe until he became Chief of Staff.[1205] Those positions gave him a vantage point to observe the major air battles over the Balkans in the 1990s, including notable frustration with air-ground integration and even CAS target identification.

As with previous conflicts and in spite of all the collaborative efforts of the AirLand Battle initiatives, no habitual CAS relationships, doctrine, or tactics remained intact at the beginning of the Balkan conflicts. In particular, there were no formal instructions for integrating NATO air power with U.N. ground forces during the Bosnian conflict.[1206] General Ryan and his U.N. ground commander counterpart, Lieutenant General Rupert Smith, developed these measures together, much as Coningham and Tedder did with Montgomery in WWII North Africa.[1207] Lambeth called Operation Deliberate Force "the first serious test of American air power in the post-Cold War era;" it was a small campaign of NATO air strikes against Serbian targets in Bosnia-Herzegovina in retaliation to a shelling attack against the city of Sarajevo by Bosnian Serbs, but use of air power required both nimble tactics and elegant international diplomacy from its military overseers.[1208]

Naval Integration

In the Balkan conflicts, the Air Force's coordination with ground forces was not the only challenge to executing CAS and successful interdiction missions. The Navy also participated in the efforts; its cruise missiles and carrier-based aircraft were the only naval power projection capabilities appropriate for the inland theater of war. Describing complaints from U.S. naval aviators about the inflexibility and inefficiencies of the air tasking message (ATM) and air tasking order (ATO) methods used to coordinate large strike packages, Lambeth concluded that these sentiments reflected a wider reality about the Balkans air campaigns. Rather than examples of poor naval integration by the air component, they were "instances of highly constrained force employment, in which it was not possible for Combined Air Operations Center (CAOC) planners to make optimal use of *any* military assets, Navy or any other."[1209] The tight reins imposed by rules of engagement and frequent last-minute target changes reflected tight top-level political control of the use of force in the conflict. As David Johnson described, however, this type of 'hybrid war' reflects precisely the conditions where close coordination between air and ground forces is critical.[1210] A paradox in identifying the appropriate command-and-control mechanisms was in view here, as discussed in the analysis of Chapter 5.

[1205] "U.S. Air Force Biography of General Michael E. Ryan," Department of the Air Force, accessed 23 October 2013, http://www.af.mil/AboutUs/Biographies/Display/tabid/225/Article/105755/general-michael-e-ryan.aspx.

[1206] Francesco Turrisi, "Education and Training Post Afghanistan," *Joint Air Power Competency Center Journal* 18(2013).

[1207] John Andreas Olsen, "Michael E. Ryan: Architect of Air Power Success," in *Air Commanders*, ed. John Andreas Olsen (Washington DC: Potomac Books, 2013), 355.

[1208] Lambeth, *Combat Pair*, 35-36.

[1209] Ibid., 39.

[1210] 'Hybrid war' is a description of fighting wherein terror organizations receive state sponsorship, giving them greater capabilities than irregular fighters would have on their own. With regard to COIN (which is at a level lower than hybrid war along the ROMO), David Johnson identified a pattern of fixing enemy forces using ground maneuver units, then destroying them with precision standoff fires, often air power. See Johnson, *Learning Large Lessons*, 176. Of Afghanistan, he says more bluntly, "we are doing small unit ground-centric [operations] that fix Taliban and then we drop a bomb on them. Not, in my view, integrated joint [operations]." Johnson interview, 24

Lambeth concluded that Navy complaints about proxies like the ATO, the CAOC, and the Air Force, received mostly from junior and mid-level naval aircrew, were really a form of venting about constraints that could not be overcome by any military scheme of operations. Admirals higher in the chain of command commented with respect to the ATO process that there was not "a better way to orchestrate 2,000-3,000 sorties per day from the four services and the numerous allied forces participating."[1211] When a naval officer served with the Coalition Forces Air Component Commander (CFACC) for Operation Enduring Freedom (OEF) over Afghanistan and the major combat phase of OIF, he was adamant that the Navy's institutional frustration with the ATO (specifically) and Air Force (generally) was due to aviators' shared frustration over political constraints on operations, not the command-and-control process *per se* or the service that administrated it.[1212] The Navy's participation in the ground war foreshadowed similar involvement in the operations of Afghanistan and Iraq; it was a dress rehearsal that would pay dividends during the longer-lasting conflicts.

Naval complaints were not completely without merit, though, nor were those of the rest of the services. McNamara's 1994 monograph affirmed the debate between centralized and organic control of air assets detailed thus far. He made a pointed observation that historic trends from Vietnam through Operation Desert Storm indicate that "the Air Force probably has given up a degree of closeness to the Army in its drive to control air power centrally;" he put a finer point on it by quoting Air Force Manual 1-1, noting the historically consistent reality that "the Air Force gives a higher priority to interdiction than CAS."[1213] The ATO of the 1990s was a holdover from the Cold War; it was designed to support a massive set-piece conventional conflict, though continued refinement of its planning processes imbued it with more agility— redirecting aircraft to strike targets with late-hour (if not last-minute) flexibility became realistic. The Navy was involved in this improvement, participating in discussions about the feasibility of combined air operations at the highest levels of command.[1214]

Procedures emerged for striking targets with greater speed and efficiency, still using the planning cycle of the ATO, again during Operation Allied Force in 1999. Allied Force witnessed significant alterations of the normal carrier deck cycle to allow for naval CAS missions.[1215]

February 2014. While this scheme can work in certain COIN scenarios, it is ineffective in a 'hybrid war' against an actor with state-like capabilities who can contest air superiority below 20,000 feet. See *Hard Fighting*, xxvii.

[1211] Riley D. Mixson, (Rear Admiral, USN) "Where We Must Do Better," *Proceedings* 118(1991): 39.

[1212] David Nichols (Vice Admiral, USN), conversation with Benjamin Lambeth, quoted in Lambeth's "Combat Pair" p. 40, 7 February 2007.

[1213] McNamara, *Air Power's Gordian Knot*, 143-44. This is something of an understatement in light of the 1992 edition of AFM 1-1, which read as follows (emphasis added): "…close air support rarely creates campaign-level effects. *Although close air support is the least efficient application of aerospace forces*, at times it may be the most critical by ensuring the success or survival of surface forces;" "Air Force Manual 1-1, Volume 1: Basic Aerospace Doctrine of the United States Air Force," (Washington DC: Department of the Air Force, 1992), 13.

[1214] Lambeth described the Navy's analysis of the feasibility of having a "JFACC afloat" to run a seaborne command post for a major conflict. The Navy's JFACC coordination committee found that an aircraft carrier is best suited to control the operations of its own embarked air wing, and that the operations of an entire CAOC would require the services of a fleet command ship not normally deployed in a carrier battle group. The verdict aside, the deliberation shows how involved the Navy was in considering and refining U.S. conduct of combined air operations; see Benjamin S. Lambeth, *Air Power Against Terror: America's Conduct of Operation Enduring Freedom* (Santa Monica, CA: The RAND Corporation, 2005), 43.

[1215] Understanding and allowance for the so-called 'carrier deck cycle' is essential for air planners to successfully integrate naval air power into combined arms operations. To minimize tactical risk, aircraft carriers attempt to minimize the amount of time they spend steam straight ahead on a predictable path that enemies can track. However, such a straight-ahead path is required for launches and recoveries of aircraft. Therefore, cyclic flight operations,

Aircraft from the *U.S.S. Theodore Roosevelt* participating in Operation *Noble Anvil* (the U.S. name for *Allied Force*) undertook double- and triple-cycle missions, allowing time to reach distant targets or aircraft to loiter over a target area to provide on-call CAS.[1216] The success of the air operations buttressed the Air Force's insistence on having a centralized plan for air control. Though it may cost some degree of integration with the Army, such plans allow for true joint integration of air power in flying CAS missions, something that was not in view with the convoluted command structures that segregated Navy, Marine, and Air Force aviation into separate forces with no meaningful overlap in Vietnam.[1217] The broader point is that actual armed conflict again witnessed an improvement in CAS procedures, including better incorporation of the naval component.

The Air Force of the late 1990s seemed to put a greater level of emphasis on CAS than it had in the 1980s, diverting resources and training from defensive counter-air (DCA), offensive counter-air (OCA), and suppression of enemy air defenses (SEAD), other mission sets that are more traditionally in line with how the Air Force views its core responsibilities.[1218] Brigadier General Peter Gersten recounted how he led a cadre of F-16 pilots to Davis-Monthan Air Force Base in 1997 to get trained in airborne forward air control [FAC(A)] procedures by A-10 pilots, who at the time were the only operators who maintained proficiency in that skill set.[1219] Ironically, a few months later, in Operation Deny Flight, then-Major Gersten was among a cadre of F-16 pilots performing the FAC(A) role for A-10s and other platforms striking targets in Serbia and Bosnia, a role reversal that would have been beyond the imagination of most in the Air Force just a few years prior.[1220]

The F-16 community began to use a new vocabulary, containing terms like Strike Coordination and Reconnaissance (SCAR), SCAR Coordinator (SCAR/C), and Killer Scout, indicating a trend toward a more ground-attack-centered focus in an airframe that had traditionally represented only the 'core' of advanced Air Force fighter capabilities.[1221] As

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wherein an aircraft launch is followed by an immediate recovery, are the norm for carriers. A succinct summary of the specific technical details is available in Peter Hunt, *Angles of Attack: An A-6 Intruder Pilot's War* (New York: Ballantine, 2002), 53-54.

[1216] A double- or triple-cycle mission is two or three times the duration of a normal 1 hour or 1 hour 15 minute carrier deck cycle; see Gordon I. Peterson, "Naval Aviation Spearheads Operation Noble Anvil," *Sea Power* (1999): 1.

[1217] See, e.g., Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 84-94. The same paradox mentioned earlier is in view, however. *Centralized* control is necessary to integrate the air power of all services into CAS operations, but *decentralized* control maximizes the effectiveness of CAS for ground commanders. This paradox receives additional attention starting with page 152.

[1218] DCA endeavors to eliminate enemy air power that is actively attacking friendly positions or interests. OCA targets enemy air power assets before they can threaten. SEAD aims to make enemy systems like surface-to-air missiles ineffective so they cannot impinge on the free employment of friendly air power.

[1219] The acronym FAC(A) is usually pronounced 'FACK-ay. Individuals trained as FAC(A)s have the same capability to clear CAS aircraft for weapons release as do JTACs.

[1220] Gersten interview, 22 October 2013.

[1221] SCAR is a mission that involves aircraft searching and destroying targets defined by a list of commander's priorities according to strict rules of engagement. SCAR/C refers to an airborne coordinator who runs several SCAR formations. 'Killer Scout' was the name given to a resurrected 'Fast FAC' mission performed by F-16s during Operation Desert Storm, who marked second-echelon Iraqi Army targets with 500-pound bombs for follow-on attacks by other airframes. None of the missions were true CAS missions, however; see Alan Lockerby, "SCAR-C Over Libya—To War in an *Aurora*," *Canadian Military Journal* 12, no. 3 (2011); Mark A. Welsh, "Day of the Killer Scouts," *Air Force Magazine*, April 1993.
http://www.airforcemag.com/MagazineArchive/Pages/1993/April%201993/0493scouts.aspx.

Lockerby emphasized in relation to Libyan operations, however, SCAR/C and SCAR missions are not CAS; the Killer Scout operations in Iraq, by dint of the operational limitations placed on fixed wing aircraft discussed earlier, were not either.[1222] Still, growing FAC(A) proficiency in the F-16 community indicated that CAS had a niche in the Air Force's dominant fighter community, albeit CAS of the 'fast-mover' flavor that had marked the beginning of the Korean and Vietnam campaigns with less than stellar results.

An exception that demonstrated some of the traditional Air Force resistance to performing CAS as a primary mission was evident in wings and squadrons flying the F-15E, a modified F-15C with two cockpits, extra fuel capacity, and the ability to carry a large bomb payload, capabilities that contrast with the sleeker 'C-model's' air-only combat capability. Aircrews flying this platform have never trained to perform the FAC(A) role, in spite of a two-person cockpit being arguably more amenable for such activity. It was common for squadron commanders to tell their aircrew, "The F-15E will never be used for CAS."[1223]

UAVs over the Balkans

An unmanned aircraft called *Predator*—later to be a familiar name over Iraq and Afghanistan—made its debut in June 1995, flying over Bosnia from an airfield in Albania. The Army first called *Predator* to combat service after its standout performance at a joint exercise, finding sponsorship for the deployment from Army intelligence officers.

Ehrhard's account of early *Predator* development showed that Air Force involvement grew quickly, budding from the participation of a single individual (a rated pilot, insisted upon by the Army officers running the program, to ensure the aircraft flew safely in complex European airspace) but blossoming into a bid for complete control by Chief of Staff General Ronald Fogelman. Fogelman's motivation sprang from his idea that Army control of an air asset would inhibit safe operations, his conviction that the technological innovation rightly belonged to the Air Force, and his perception of visible congressional support for the system.[1224] Documents and interviews attained and conducted after Ehrhard's work confirm these conclusions, and also emphasize the extreme frustration the service's UAV innovation manager had in moving a system that was still a technology demonstration when it was fielded into operational status at an austere Army airfield in eastern Europe.[1225] Nevertheless, with continued executive support from the highest levels of the Air Force, along with a continued need for surveillance of compliance with the Dayton Accords, *Predator's* place in the inventory became stable, if still very small.

Summary

This brief discussion of COIN and historical summary of close-support and UAV air power sets the context for the state of COIN air power capabilities at the outset of operations in Afghanistan and Iraq following the 9/11 attacks. The mission of providing direct support to ground forces has simply never captured the imagination of air-power advocates the way more strategic, longer-ranging applications have, relegating CAS and battlefield ISR to the Air Force's lowest priority for the use of scarce aviation assets. Both services have other competencies they would prefer to

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[1222] Lockerby, "SCAR-C Over Libya," 64.

[1223] Orchard interview, 24 November 2013.

[1224] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 539-41.

[1225] Peter Laclede (First Lieutenant, U.S. Air Force; Squadron Intelligence Officer, 336th Fighter Squadron), personal interview with the author, 31 January 2014; James Clark (Memorandum for the Air Force Assistant Vice Chief of Staff (Subj: PREDATOR)), 28 April 1997.

burnish during peacetime, which means that the Air Force's ability to provide CAS and the Army's experience in putting it to good use both atrophy during lulls in combat operations. When armed conflicts arise, though, the urgent need for combined arms effectiveness forces close cooperation and a relatively fast learning curve that returns both services to an acceptable level of competence. When OEF and OIF began, the Navy and Air Force had attained, from the Balkan conflicts, recent joint experience hitting targets in a relatively permissive air combat environment. Both services' aviation capabilities had supported conflict objectives in a way that had forced them to improve capabilities not exercised since the Gulf War of 1991. This left the capability to find, fix, and destroy targets in a manner that would prove especially useful at the outset of OEF, but left untested close coordination mechanisms that would need to be dusted off when large ground forces became part of the equation. UAVs, which revived from a long hiatus during the Balkan conflicts, were poised to make significant contributions in the Afghan and Iraqi conflicts, but had not yet been tested in the roles they would assume.

III. Observing COIN Air Power Through the Lenses of Theory
A. General Theories of Organizational Interaction
1. Public Goods: Do the services act as free riders in the production of national security? Do military organizations need to be goaded through public pressure to reach jointness or will they seek it with sufficient appeal to purpose? Which better encourages jointness, social pressure or an appeal to purpose?

No intentional free riding
There is little evidence that military services attempt free-riding behavior with respect to national security issues. On the battlefield during OEF and OIF, there was no intentional effort by one service to shirk participation to the added burden of another. Tactical forces from all services were eager, even desperate, to provide support to their counterparts and do so with mutually helping behaviors.[1226] The effectiveness of combat in removing barriers to jointness appears many times in this analysis. The lack of command-and-control structures in place at the time of Operation Anaconda does not reflect deliberate shirking but simple unpreparedness of units and commanders who did not have perfect intelligence and could not imagine every eventuality of battle. Those facets reflect the "friction" of war; they are the inescapable factors that Clausewitz promised would ensure "one always falls short of the intended goal."[1227]

Parochial inter-service defensiveness, even dissembling, about Anaconda ensued, but did not keep the senior leaders involved from approaching the next phases of OEF and OIF with good faith in seeking jointness. Waning inter-service helping behaviors for a period after 2006 are better understood in terms of service culture, individual personalities, and ambiguous national strategy rather than free-riding behavior. Ambiguity arose mostly because war is uncertain. But a certain amount arose as a result of exogenous dithering about the character of the Afghan war: was it to be MCO and then strictly counter-terrorism, or would it evolve into a COIN battle over time? Observations about this uncertainty, its effect on civil-military relations,

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[1226] As this work has defined the strata of the defense establishment, inter-service battlefield cooperation is *meso-organizational*, since it happens between members of the *endogenous* services under the auspices of a joint-force commander. Input from the Joint Chiefs of Staff or Chairman is likewise meso-organizational; DoD, congressional, coalition, or presidential input would be exogenous.
[1227] Clausewitz, *On War*, 119.

and the structural effects of the defense hierarchy appear later in the discussion of military-specific observations (see page 473ff.).

Lack of free riding squares with Olson's predictions about the effective peer pressure regimes within small groups; it is also commensurate with Jeffrey Donnithorne's finding that the services implement ambiguous policies pursuant to "their culturally conditioned understanding of what compliance actually requires in that particular context."[1228] Though the services pursued the tasks assigned to them in Afghanistan and Iraq with all their institutional might, significant differences of opinion as to what exactly those were and about the best way to pursue them arose. As expected, those fell along the lines of strategic preferences for each service and are addressed beginning at page 477.

Social pressure and jointness

For this case, evidence that the services behaved collectively as a small group, one in which guilt and pressure tactics were effective in influencing behavior, was more useful than agency theory in determining which conditions encouraged jointness. Whatever service preference Air Force senior leaders might have had to supervise "air strikes from their base in Saudi Arabia," both the threat of failure and the need to be seen as a full team member drove General Moseley to establish the Air Component Coordination Element (ACCE) construct, an empowered flag air officer embedded with each service component in both AOs, able to represent air power in person.[1229] His choice for the first ACCE commander in Iraq, Major General Dan Leaf, demonstrated a desire for genuine cooperation and an appreciation that inter-service accommodation was important.[1230]

As the conflicts continued, dissonance over different services' perceived contributions to the COIN mission led again to the indirect application of small-group pressure, particularly to the Air Force. However, this pressure arose over perceptions about areas mostly distinct from air power. In 2008, General Norton Schwartz, the newly-appointed Chief of Staff who followed in the wake of General Moseley's abrupt departure, renamed the practice of augmenting Army units with Air Force personnel from "in-lieu-of" (ILO) assignments to "joint expeditionary taskings" (JET), calling attention to the Air Force's "combat-focused mind-set and our joint posture."[1231] Air Force public affairs services released statements allowing, "JET airmen work solely for the Army."[1232]

In the opinion of some Air Force senior leaders interviewed for this work, such a statement runs counter to joint doctrine because it does not acknowledge the overarching authority of the joint force commander.[1233] David Johnson demonstrated, however, that joint doctrine "defers to

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[1228] Donnithorne, "Principled Agents," iv.

[1229] Naylor, *Not a Good Day to Die*, 272.

[1230] General Moseley selected then-Brigadier General Daniel "Fig" Leaf as the first ACCE for Iraq. He had a unique background, including a teaching assignment at the Army's Command and General Staff College, as well as extensive experience with U.S. Forces Korea. As a result, many Army personnel knew Leaf. "The Army—and [MNF-I Commander General David] McKiernan—loved this guy. Every time a VTC came up [between the CAOC and MNF-I], there was Fig, sitting at the right hand of McKiernan;" Rew interview #1, 7 January 2014.

[1231] Megan Scully, "Thinking Outside the Wire," *Air Force Magazine*, August 2010, 50. http://www.airforcemag.com/MagazineArchive/Documents/2010/August%202010/0810wire.pdf.

[1232] John Gordinier, "JET Airmen Support Soldiers at Forward Operating Base," 17 February 2009, http://www.af.mil/News/ArticleDisplay/tabid/223/Article/121141/jet-airmen-support-soldiers-at-forward-operating-base.aspx.

[1233] Lieutenant General Deptula in particular was adamant on this point: "Do not make the mistake of saying that the Army is a 'customer' of the Air Force. All services should work for the Joint Force Commander. The fact that we

the surface components" in the establishment of areas of operation (AOs) for major campaigns and that "JFCs generally defer to the ground [component] commander's desire to have an expansive AO to execute a service doctrine…"[1234] Once COIN becomes the national mission, the services in effect do 'work for' the Army in its position as the lead for COIN operations, no matter how much this might strike other services as a misunderstanding of joint doctrine or abuse of the concept of military componency. For a third consecutive case, this reveals the enduring tension that exists among the service doctrines and the so-called 'joint' doctrine released in official publications.[1235]

Regardless of service perspectives on what joint doctrine says (or should say), the outcome was consonant with a perspective of small-group pressure as explained by Mancur Olson. Thus, to the degree service behaviors observed toward the end of the COIN conflicts reflect improved joint cooperation, social pressure (as well as other forms of external pressure, discussed later) seem to prevail over any appeal to purpose.

With respect to the application of air power to COIN mission requirements, it seems that all services made good-faith efforts to improve capabilities throughout the period of conflict. A naval aviator interviewed said, "The Navy sees CAS and COIN as an area where it can continue to make a useful contribution to national defense."[1236] The willing participation could be due to the inherent threats of war, the pressure of the inter-service 'small group,' the appeal to cause of the common defense, or a bureaucratic desire to demonstrate relevance and merit for continued budgetary representation. Such explanatory equifinality is not unique to the naval integration observed.

Though the technology, materiel, and training advances specific to COIN air power proved more prevalent and easier to implement than organizational changes, the case history offered ample, if at times uneven, evidence of progress on all three fronts. The discussion of exogenous structures later in this section describes how Defense Department leaders criticized the Air Force's contributions to COIN support, but on balance the effort did not constitute shirking of responsibility, particularly if one accounts for the changing guidance emerging from the executive branch as a whole.

2. Organizations: How do threats, bureaucratic politics, and political maneuvering influence jointness? How do service subgroup interests advance or inhibit joint cooperation? Do overlapping capabilities advance or threaten jointness?

First-order response: military threat and fear of failure
There is little doubt that COIN air power progress observed in OEF and OIF came in substantial part as a rational response to a first-order threat. The fear of continued terror strikes against the U.S. and its allies arose first, followed closely by a threat of losing the COIN struggles to civil meltdowns in Afghanistan and Iraq. The response to threats by the services, inasmuch as they reflect a fear of losing their bureaucratic autonomy, provide another illustration of why warfare

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say the Army is a 'customer' of the Air Force shows how far we've deviated from joint doctrine in Afghanistan and Iraq." Deptula interview, 5 December 2013.
[1234] Johnson, *Learning Large Lessons*, 142, 44.
[1235] For example, see the tone of general protest—objecting that the Army and Marine Corps had dictated the "surface-minded" terms of emerging COIN doctrine—evident in Dunlap, "Air-Minded Considerations for Joint Counterinsurgency Doctrine," 63.
[1236] Maloney interview, 12 December 2013.

is so effective in facilitating jointness: the simple shared interest of not failing goes a long way to ensure inter-service cooperation.

The inspiration provided by first-order threats seemed able to overcome inter-service politics, which were in view prior to Anaconda, but there is more to the story. Both the Army and Air Force exhibited characteristic bureaucratic inertia in neglecting operational-level CAS competency and command and control, but dissatisfaction with outcomes in the Shahikot Valley led rapidly to sharp focus on overcoming these tendencies. The sharing of resources provided by specialized services is the apparent motivation for joint warfare, and is the motivation viewed from the meso-organizational level (which implements jointness) and the exogenous level (which mandates jointness). Here, the land component needed the fires and persistent ISR the Air Force could provide, the special operations component needed the mass of conventional Army forces to round up dispersed militants, and the air component needed the aviation assets of the Navy and Marines to fill out its complement of CAS and strike options. From an organizational perspective, however, the incentive to cooperate came from the services' anticipated loss of endogenous autonomy (due to the actions of the exogenous defense establishment—most likely the Secretary of Defense, but possibly Congress or the President if failure is extreme) if combined-arms problems are not solved.

While threat of failure was in some cases able to override both bureaucratic inertia and political pulling and hauling, it was unable to overcome some strong personalities pursuing agendas aligned with service preferences. An example offered in some interviews for this work was the behavior of then-Lieutenant General Gary North, who was the CENTCOM air component commander from February 2006 through August 2009.[1237] By many accounts, he refused to acknowledge a supporting role to the joint task force commanders with authority over operations in Iraq and Afghanistan. North would only acknowledge his relationship as a component commander to the CENTCOM commander, even though the orders directing U.S. participation in the Multi-National Force—Iraq (MNF-I) and International Security Assistance Force (ISAF) had designated the respective commanders of those organizations as legitimate joint force commanders while the CENTCOM commander's attention was on broader theater concerns.[1238, 1239]

North's apparent motivation was to demonstrate that the air component would not answer to anyone other than the overall regional combatant commander, a point he made at the expense of many broken joint relationships.[1240] To be sure, the strategic doctrine of his own service left him in a philosophically precarious situation, and some responsibility for the tension lies with the CENTCOM commander, as discussed later. His conduct receives more attention in the crisis-cooperation discussion starting at page 461, but merits mention as evidence that first-order threats do not always overcome bureaucratic-political considerations, especially when the threat of failure is not urgent, and echoes Graham Allison's and Philip Zelikow's fundamental point about the political decision-making process.[1241]

[1237] "U.S. Air Force Biography of Gen. Gary L. North," Department of the Air Force, accessed 7 January 2014, http://www.af.mil/AboutUs/Biographies/Display/tabid/225/Article/104909/general-gary-l-north.aspx.

[1238] MNF-I and ISAF were, "sub-regional joint commands." According to the CENTCOM orders establishing the Afghan and Iraqi areas of operation (AOs), the joint force commander in each AO had tactical and operational authority over all of the forces in his respective AO.

[1239] Rew interview #1, 7 January 2014.

[1240] Ibid.

[1241] See, e.g., Allison and Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 255-58.

Subgroup coalescence

Allison and Zelikow likewise addressed the central role of coalitions in the development of policy.[1242] The coalescence of service subgroups with external organizations seems to have accelerated the growth of UAV-ISR capability. The ground forces waging the COIN wars required a good deal of persistent surveillance, and the Air Force had pioneered the UAV capability to provide it. The inter-service dependence led to more rapid development of systems that improved joint cooperation, even though the interests of the Air Force's UAV subgroup and the larger defense community sometimes clashed with the desires of the corporate Air Force. The USAF stood up MQ-1 and MQ-9 squadrons under the auspices of AFSOC, but also used the conventional squadrons assigned to Air Combat Command extensively to support Special Forces' requirements for the asset. DoD also exhibited a marked interest in UAV programs, particularly after 2006 when Robert Gates became the Secretary of Defense.

Thus, the interests of UAV operators, a sub-group in the Air Force that was visibly marginalized at the beginning of OEF and OIF, coalesced with those of meso-organizational and exogenous groups, namely industry, Congress, SOCOM, and DoD.[1243] The result was increased joint capability in the form of a greatly expanded UAV-ISR force. The low standing of the UAV community exists in the context of an 'individualistic' overall Air Force culture, which corresponds with Jeffrey Polzer's findings about subgroup interests. Had the UAV community already existed as a dominant in-group within the Air Force, its cooperation with the Army and 'adoption' by the DoD might have been more difficult. In the event, lower relative organizational stature probably led to greater ease of cooperation with another service in meeting the collective demand for UAV-ISR capability.[1244] In the process, UAV operators within the Air Force attained the career progression to command required to fully entrench a new technology as a viable branch of a military service, an outcome discussed from the perspective of military innovation (starting at page 471).

Overlapping capabilities

The last question to answer with regard to organizational interaction is the effect of overlapping capabilities. Clearly the Army was diligent in pursuing medium-altitude UAVs for the purposes of expanding its access to real-time ISR. Evidence is inconclusive that this factor drove faster Air Force efforts in the same arena; DoD influence seems to have been greater on the Air Force than the Army, though.[1245] Also, the rapid proliferation of hand-launched micro-UAVs seems to have taken a good deal of pressure off the demand for medium-altitude UAVs, with the number of Air Force CAPs finally reaching a stable plateau.[1246] Even to the degree that overlapping capabilities and demand did force faster acquisition, it came at a price that ultimately proved harmful to the combined-arms aspect of jointness. According to an Army ISR expert in Afghanistan, concerns

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[1242] Ibid., 258.

[1243] The Air Force Chief of Staff drove home this point by acknowledging the UAV community's status as that of a "leper colony;" see Mulrine, "UAV Pilots."

[1244] Polzer, "How Subgroup Interests and Reputations Moderate the Effect of Organizational Identification on Cooperation," 71, 91-93.

[1245] "In fact, the service had maxed out its ISR assets and was adding more at the limits of the manufacturer's capacity—which Gates knew—but he kept up a public tirade against the service anyway, all the while ignoring the Army's withholding of similar assets from the fight;" see Tirpak, "Gates Versus the Air Force."

[1246] This claim is based on the observations of Army officers interviewed who mentioned the ability of organic micro-UAVs to meet their ISR requirements later in OEF and OIF; e.g., Jordan interview, 3 February 2014.

about airspace and interference with manned helicopters became serious as the systems proliferated.[1247] The same factors that limited earlier Army efforts to develop and integrate UAVs promise to dampen post-conflict enthusiasm for maintaining current systems, and integration into the joint airspace-control scheme seems to be a serious safety risk.

3. Crisis Cooperation: Do military services make decisions about jointness in a context of crisis? How does the perceived urgency of a dilemma affect decision and cooperation mechanisms?

Perceptions of crisis are dependent on one's hierarchical position and personality
Endogenous level. The urgency and immediate threat of failure presented by combat situations appear to drive joint cooperation at the tactical and operational levels of war. Few things seem to melt bureaucratic walls better than the heat of combat, and the frustration of being unable to help in a firefight seems to animate many with a zeal to ensure others do not suffer the same sense of ineffectualness in later firefights. Sometimes the crisis-tinged nature of military operations provides the opportunity to practice missions that cannot occur over domestic soil, even training areas. As reflected in the Balkans and later Afghanistan, having a substantial piece of airspace 'opened' by combat operations proved a boon for UAV advancement.

The rally-around-the-flag effect, particularly after incidents like Anaconda or while preparing for an uncertain event like the invasion of Iraq, seems to have produced the kind of general effects that crisis-cooperation theory presumes. For example, in contrast to the lack of operational-level air-ground planning that characterized Operation Anaconda, mechanisms for providing conventional Army forces with air support received detailed attention. The kill-box interdiction CAS (KICAS) plan first used to support the Army's V Corps in Iraq was introduced "with some consternation," but because of dedicated effort in the air and ground components leading up to OIF, it provided effective joint cooperation.[1248]

Meso-Organizational level. The initial urgency to succeed through joint effort did not endure throughout the duration, though, especially at higher levels of the military bureaucracy. A prominent example given by military personnel interviewed for this work is that of Lieutenant General Gary North, whose behavior as the CENTAF Commander between 2006 and 2009 caused a great deal of angst for subordinate Airmen and among some senior military land component commanders. A senior Air Force general recalled that then-Lieutenant General North's tenure as the air component commander was marked by friction with the two four-star joint force commanders, subordinate to CENTCOM, who oversaw operations in Afghanistan and

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[1247] Ketti C. Davison (Colonel, U.S. Army; Chief of Plans (CJ-5), HQ ISAF, Kabul, Afghanistan), e-mail exchange with the author, 7 February 2014.
[1248] The KICAS plan involved dividing Iraq (and eventually all of the CENTCOM AOR) into a scheme of nested squares that followed the grid-mapping system favored by the Army. The simple, common frame of reference that resulted served several command-and-control functions. During MCO, particular areas free of friendly forces could be opened for attack against all enemy targets. When close coordination was required, the labeling system allowed aircrew to quickly identify the location of an attack or a troops-in-contact (TIC) situation. Though the plan reached the CAOC rather later than planners would have liked, diligent effort by V Corps Army and Air Force planners who liaised with General Moseley's staff helped make the plan functional enough that it remained in place for the duration of all operations; Rew interview #1, 7 January 2014.

Iraq. "Later on, in Iraq, it appeared to many Airmen and members of the MNF-I staff that the only joint force commander General North recognized was the CENTCOM commander."[1249]

A team studying joint command-and-control structures at the joint behest of Air Force and Marine Corps headquarters learned of and then experienced first-hand the "visceral hatred" Marines had developed for the air component by 2007, a reversal of the cordial relationships between the air- and land-component commanders that had marked the beginnings of the Iraqi campaign in 2003.[1250] Though nearly six years of fighting amid difficult circumstances could strain any relationship, evidence suggests that a new CFACC's personality, demeanor, and leadership style induced tremendous difficulty into the relationship between the air and land components. A survey of command-and-control mechanisms in the CENTCOM AOR revealed that the air component commander had ordered that CAS be referred to as "Close Precision Strike" and had further ordered his subordinates to remove the words 'supporting,' 'supported,' or 'enable' from planning and strategy documents.[1251] The changes tended to make subordinate Air Force personnel "express disdain at doing support" and contributed to "a climate of mistrust and adversity" among joint partners.[1252]

Even more damning for joint relationships was the AFCENT commander's insistence that his flag-officer subordinates positioned in Afghanistan and Iraq contact him for approval of any decision about air power, no matter how small.[1253] The effectiveness of these officers was diminished by their lack of delegated authority, and the time it required to request and receive permission from Shaw Air Force Base, South Carolina (the location of General North's headquarters) caused resentment from land-component counterparts.[1254] North's atavistic

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[1249] "The CENTCOM establishment order for MNF-I said it was the joint task force in Iraq. It also stated that the 'MNF-I commander was the joint force commander in Iraq of all the U.S. forces assigned to Iraq.'—the order physically said that. It appeared to many that the only CFACC recognized theater 'joint force commander' was the CENTCOM commander. Disagreement about some airspace issues highlighted this problem. The Airspace Control Order, like the ATO, is written by the CFACC and approved by the 'joint force commander.' This was the routine when General Moseley was the CFACC for the MCO phase. When I asked General North if he intended to have the ACO approved by the 'joint force commander', either CENTCOM or MNF-I, he said, 'Nah, I don't think so.' We had these friction points between the theater CFACC and the fight going on in Iraq, the fight going on in Afghanistan, and what was going on in HOA [the Horn of Africa]. There wasn't a common joint recognition of what the theater CFACC's role was, or what was the role of the air component, or the AFFOR [Commander, Air Force Forces] and his relationship to the Commander, MNF-I—who was designated by the joint force commander as the JTF commander for U.S. forces in Iraq;" ibid.
[1250] Ibid.
[1251] USAF-USMC Warfighter Talks, Air Force/Marine Tiger Team (AFMCTT), *CENTCOM AOR Trip Report*, 8-20 January 2008, 5. Rew also recounted the story of an Air Force colonel who had used the word "support" in a routine summary report of daily operations. He recounted that the individual received an "e-mail directly from General North that asked, 'What didn't you understand about my intent with regard to the word "support"?'" Rew interview #1, 7 January 2014.
[1252] *CENTCOM AOR Trip Report*, 6.
[1253] Bochain recounted that then-Lieutenant General Odierno requested that the air component move some rescue helicopters closer to Basrah, Iraq to support ongoing operations there. He made the request at the daily battlefield update brief in his headquarters. The air component representatives thought the request was "no problem" and easily supported by the expeditionary air wing that would be tasked, but could not provide the answer with the authority they had been delegated. General Odierno was frustrated with the need to ask permission and the delay in getting an answer. "Invariably, it would take two, three, or four days to get an answer back from the CAOC, and all that did was [anger] General Odierno;" Bochain Interview, 24 January 2014.
[1254] General Rew recounted instances of "two-star generals," subordinate to Lieutenant General North in positions like the ACCE or Deputy CAOC Commander, who were "brought to tears" by their inability to contribute meaningfully to day-to-day operations in the areas to which they were nominally assigned. "They had no authority

channeling of Billy Mitchell's most egregious sister service-baiting behaviors seemed to shock some of his fellow senior airmen.

Criticism of Lieutenant General North's approach to jointness must be tempered by acknowledging the difficult situation in which the command relationships established within CENTCOM put him. As a three-star general, he was effectively subordinate to three four-star generals. According to Air Force doctrine, his nominal 'boss' was the CENTCOM commander. But in the eyes of the four-star joint task force commanders who ran Afghanistan and Iraq—and according to joint doctrine—North was also *their* component commander who was charged with providing them an adequate amount of air power capability, particularly since they did not interact with an empowered Airman who could make decisions in their respective AO. They did not appreciate North's assertions of component independence or unilateral air-component decisions that altered apportionment arrangements across the CENTCOM theater.[1255, 1256]

Analysis of these behaviors through a lens of crisis-cooperation theory yields a helpful observation that might inform a pre-theory of jointness. Though it is impossible to characterize the behavior of all AFCENT personnel, changes instigated during this period appear to have occurred with apparent professional courtesy, deference to military rank, and absence of open argument. The description of AFCENT behavior with respect to the other components is consistent with bureaucratic politics: while the organization kept up appearances of functional cooperation, it did so with an underlying subtext that advanced institutional interests at the expense of genuine helping. In this light, the "eyes of ground guys boring holes into me" that Lieutenant General Rew described are an expected outcome, with palpable negative impact on joint cooperation.[1257, 1258]

This atmosphere for crisis decision making existed in stark contrast to the behaviors and strategies in view just after Anaconda. At that time, the inter-service behaviors are best described, in the vocabulary of the theory, as 'fighting.' No shortage of witnesses testified to the stormy nature of inter-service dialogue that followed Hagenbeck's comments to the media about Air Force CAS. However, both services made overtures in their preparation for combined operations

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to make many decisions. And when they made a decision—even one that made perfect sense—they seemed figuratively castrated;" Rew interview #1, 7 January 2014. Bochain added, "It appeared that some of these decisions were being made just to make a point;" Bochain Interview, 24 January 2014.

[1255] For example, North in one instance used F-16 aircraft positioned at Balad Airbase, Iraq, to fly a mission in Afghanistan. Normally, Iraq-based assets serviced that AO alone, while Afghan-based assets remained in that AO. There were some air assets dispersed throughout the rest of the CENTCOM AOR that could flow between the two countries depending on need. However, North's direction to use the aircraft in Iraq for operations in Afghanistan— halfway across Asia—happened without apparent approval from either CENTCOM or any of the AO commanders; Rew interview #1, 7 January 2014.

[1256] North's unenviable position and the way he chose to deal with it evoke Clausewitz discussion of the line between strength of character and obstinacy. To an adherent of air power principles that have informed U.S. Air Force philosophy well prior to its inception, North reflected a high degree of character, while it seems that surface force peers merely found his approach obstinate. Clausewitz wrote, "Strength of character can degenerate into *obstinacy* [sic]. The line between them is often hard to in a specific case, but surely it is easy to distinguish them in theory;" [emphasis in original] Clausewitz, *On War*, 108.

[1257] Rew interview #1, 7 January 2014.

[1258] The review of operational concerns revealed distinctly different procedures over the 'Marine AO' than over the rest of Iraq in an area purported to be under uniform airspace control. Further, airspace coordination mechanisms between western Iraq (where Marine operations occurred) and Baghdad fell victim to inter-service bickering. The outcome was a threat to flight safety of military and civil aircraft, as the respective air traffic control organizations fielded by the air component and Marines avoided pursuit of simple coordination procedures that could have addressed the issues; *CENTCOM AOR Trip Report*.

in Iraq best labeled as 'signaling trustworthiness.' The establishment of good-faith coordination mechanisms and visible reliance on component leads by the joint force commander in 2002 and 2003 demonstrate the paradoxical outcome predicted by the theory: a degree of fighting in some decision-situations seems to have a cathartic effect that furthers useful cooperation throughout a crisis event.

The account of Lieutenant General Mike Hostage, who succeeded North as the CENTAF commander in 2009, provides evidence of the positive effect one personality can have on inter-organizational interactions. After assessing the state of affairs across the air component, Hostage determined that he "found the ACCE construct wanting" for operations in Iraq and Afghanistan.[1259] Major General Charles Lyon, who worked for Hostage as the ACCE in Afghanistan, described that actions taken to empower the ACCE addressed "historic concerns of [MNF-I] and [ISAF] by presenting a task force commander rather than a senior liaison officer."[1260]

Explicitly invoking the example of Patton and Weyland, Hostage "empowered the ACCE-Afghanistan and ACCE-Iraq" with "limited operational control and full administrative control over…AFCENT forces in each JOA…"[1261] Hostage and his ACCEs managed this compromise across the two JOAs "while preserving the CFACC's flexibility to swing forces to meet emergent needs" of the CENTCOM commander.[1262] In stark contrast with North's example, Hostage toured the two main CENTCOM AOs, meeting the joint force commander in each with his ACCEs and promising, "I will cash any check my ACCE writes."[1263]

The focus on meeting the operational goals of the joint force commanders, rather than focusing on metrics specific to air operations, seemed to assuage many of the concerns of those commanders and restored much of the goodwill between air and ground forces across the theater. In making a critical command-and-control 'compromise' that established a command relationship more easily understood by the joint force commanders (who were always of an Army or Marine Corps background) without sacrificing the overall centralized control of the CAOC, Hostage put into practice across the CENTCOM AOR the same types of compromises that had enabled successful and harmonious air and ground component coordination throughout WWII. This contrast between two separate air component commanders' styles suggests that personality and good will can overcome a good deal of inter-service friction.[1264]

Exogenous level. At the exogenous level, there was a dichotomy of perception about whether the military operations in Afghanistan and Iraq should consume most of the defense establishment's attention or rated as mere contingencies. This study previously noted Secretary Rumsfeld's general dismissal of land-force estimates that predicted the need for a large contingent to perform

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[1259] G. Michael Hostage, "A Seat at the Table: Beyond the Air Component Coordination Element," *Air and Space Power Journal* (2010): 18.

[1260] Charles W. Lyon and Andrew B. Stone, "Right-Sizing Airpower Command and Control for the Afghanistan Counterinsurgency," *Air and Space Power Journal* (2011): 10.

[1261] Hostage, "A Seat at the Table," 18.

[1262] Lyon and Stone, "Right-Sizing Airpower Command and Control for the Afghanistan Counterinsurgency," 10.

[1263] Rew interview #1, 7 January 2014. Also quoted in "Right-Sizing Airpower Command and Control for the Afghanistan Counterinsurgency," 5.

[1264] An Air Force General who had directed air-mobility operations in combat theaters recounted that similar compromises between the centralized structures favored by the Air Force and the organic-assignment arrangements favored by the Army were routine, which helped to explain why air-mobility apportionment and allocation never rose to the same level of dispute as did CAS and ISR; Lorenz interview #2, 16 December 2013.

post-MCO stability operations. General Jumper expressed frustration with Rumsfeld's apparent lack of immediate concern for OEF and OIF while closely managing plans for future military development: "You had OSD trying to work things in a very normal, peacetime way while the services were trying to keep the war effort going. It was difficult to sit through long—very long—sessions about what was 'transformational' and what was not, discussing systems that I knew were decades off."[1265]

Ironically, the views of the Air Force service chief and the defense secretary seemed to swap with a change of personnel in those positions. Secretary Gates' tenure was marked by detailed concern with day-to-day warfighting. In addition to the attention he gave Air Force UAV programs, he pushed to get mine- and IED-resistant military vehicles rushed into use after many years of service foot-dragging.[1266] In sharp contrast with Jumper's view of Rumsfeld's gaze into long time horizons, Moseley criticized Gates for having "this-war-itis." He remarked that, "I think you have to be able to walk and chew gum at the same time. You have to do both: fight today's fight and prepare for the future…it's not either-or."[1267] Evidence that exogenous organizations provided uncertain or inconsistent strategic guidance is in ample supply; the forthcoming analysis of civil-military relations considers this in additional detail.[1268]

Crisis-cooperation dynamics change over time
The theoretical discussion of crisis cooperation included an exploration of the behaviors, decision-situation actions, and overall strategies of organizations going through long-term crises. One aspect in particular may be applicable to the case of COIN air power in OEF and OIF. It is already apparent that both crisis dynamics, along with the personalities of senior commanders, impacted the chances of effective joint cooperation in providing COIN air power. The length of the Afghan and Iraqi conflicts also allows a brief observation that reinforces another idea from crisis-cooperation theory.

This analysis has already offered a hypothesis that inter-service fighting at times led to better jointness by building long-term trust, whereas a sort of seething civility masked uncooperative and non-joint bureaucratic point-scoring. This discussion mentioned decision-situation and crisis-strategy variables, two-thirds of the triad of relevant crisis-cooperation theory variables. The third variable addressed by the theory is the nature of a crisis. Specifically, research shows a correlation between open fighting and crises marked by short-term, unknown threats. In contrast, crises that remain uncertain but appear to unfold over a longer term seem to drive organizations to pursue more cooperative strategies.

The example of how the Air Force and Marine Corps resolved disputes about command-and-control relationships of COIN air power seem to confirm this theoretical prediction. The

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[1265] Jumper interview, 16 December 2013.

[1266] Gates, *Duty: Memoirs of a Secretary at War*, 121-22.

[1267] Tirpak, "Gates Versus the Air Force," 54.

[1268] Crisis-cooperation theory also allows speculation that had there been more open fighting between the services and Rumsfeld during his administration—as there was between Gates and the Air Force—that more dialogue about pressing issues like strategy may have occurred. Rumsfeld's disagreement with service chiefs and other senior military leaders never rose to a level that caused him to relieve them. It also invites speculation that more service chiefs might have been relieved as well. Gates was not shy about bold personnel moves; in addition to his Air Force culling, he ensured the early retirement of a Chairman of the Joint Chiefs of Staff, General Peter Pace, though that move was more related to congressional ire over the Iraq War in general than Pace's performance; Thom Shanker, "Chairman of the Joint Chiefs Will Not Be Reappointed," *The New York Times*, 9 June 2007. http://www.nytimes.com/2007/06/09/washington/09military.html?_r=0; Gates, *Duty: Memoirs of a Secretary at War*, 65.

Marines, who retain significant organic air power and employ air control organizations with "fundamental differences" from analogous Air Force organizations, had fierce disagreements about airspace control wherever their operations abutted other ground forces supported primarily by Air Force and Navy air power.[1269] However, as operations in Iraq drew down and the marine component shifted focus to efforts to Afghanistan, inter-service relations at this long-standing "seam" started to improve.[1270] Crisis-cooperation theory is not powerful enough to explain the whole change; equifinality is in clear view. In addition to the COIN air power 'crisis' shifting from a short-term to long-term issue in the mind of the services, the efforts at inter-service dialogue, new senior leaders, and the removal of specific operational challenges may have all contributed to the observed increase in joint effectiveness.

The example of normalizing Air Force-Marine Corps relations also serves as a reminder of a historical observation. Specifically excluding Air Force planners from their preliminary air planning and execution, the Marines continued in Iraq and Afghanistan a pattern established in Korea and Vietnam. Initial distrust between air planners and marine aviation has morphed into episodes of cooperation, but not without disagreement. An Air Force argument in favor of single-component control of all air assets and airspace generally meets with cool or hostile reception from Marine leaders, leading the joint force commander to allow the *de facto* establishment of distinct AOs. The Air Force in turn predicts an air power fiasco. The Air Force's protests have generally proven to be preemptory and somewhat hollow; tactical disaster has not ensued, even if some efficiency and inter-service good will suffered in the process.[1271]

The conclusions this case-study review draws about the nature of crisis cooperation are the following: 1) the perception of crisis and the rally-round-the-flag effect it produces are genuinely useful for fostering joint cooperation, 2) military organizations, used to conducting operations in austere, dangerous, and unpleasant circumstances, may quickly move away from the perception of crisis over prolonged combat operations, 3) absent the urgency and attention on a service's autonomy provided by threat of combat failure, the personalities and uncooperative attitudes of individual leaders may overcome organizational tendencies toward cooperation, 4) organizational disagreements and fighting may over the long term enable better cooperation than the maintenance of professionally polite behavioral norms, and 5) the 'normalization' of a

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[1269] A report lists four key differences between the Marine Air Command and Control System (MACCS) and Tactical Air Control System (TACS). In brief, the MACCS allows more seamless integration of air and ground forces than did the under-resourced TACS established for Iraq; *CENTCOM AOR Trip Report*, 10-11. Additionally, the MACCS held more institutional prestige within the Marine Corps than did the TACS within the Air Force, and these relationships hold true today. The report concluded that the contrast leaves the Air Force ill-suited to perform its inter-theater air support integration function for which it claims responsibility, while its characteristics diminish the confidence placed in it by MACCS operators.

[1270] The progression of relationships was nuanced, slow to blossom, and benefited greatly from a transition away from sticking points in Iraq. After continual inter-service fighting in Iraq over command-and-control issues, tensions remained high as the Marines prepared to move into southwest Afghanistan with the bulk of their forces in 2007-2008, with inter-service dialogue very heated in 2008. Establishment of the marine sector in Afghanistan witnessed the same disputes over airspace control upon which the Air Force and the Marines typically disagree. However, by 2010, General Conway, the Commandant of the Marine Corps, said to General Schwartz in front of assembled generals from both services that "the air arm of the air-land team is the greatest killer on the battlefield," which is high praise for the Air Force from a Marine; Clark, S. Interview, 17 and 27 November 2013.

[1271] General George Stratemeyer was "infuriated" when he learned he had been left out of the Marines' planning for Korea; Trest, *Air Force Roles and Missions: A History*, 144. The "tense, strained" Air Force-Marine Corps relationship that ensued in 2008 when the Marines prepared to move to southwest Afghanistan recalled the same dynamic; Clark, S. Interview, 17 and 27 November 2013.

crisis may cause inter-organizational behavior to change (for good or ill) commensurate with the observations of crisis-cooperation theory.

4. Professions: Do overlapping service capabilities advance or hinder jointness? Do subclasses vying for recognition in their respective military services offer a mechanism for joint cooperation?

Competition for credibility
An 'overlap' of service capabilities implies mutual need for a particular battlefield specialty. In the case of COIN airpower, too much overlapping capability diminishes the interdependence necessary to drive cooperation and creates redundant, competing systems. To use a counterfactual example, if the Army believed it could tackle all of its OEF CAS requirements with attack helicopters, there would have been no need to develop a robust joint air-ground system. The only real CAS requirement would arise in large operations, like Anaconda, that would overwhelm a single service's capacity. The likelihood of successful assistance would be low, though, because of a lack of routine inter-service practice prior to the urgent need for precise cooperation. Some professional interdependence is required; otherwise the services grow contemptuous of the contributions others bring to combat and combined arms ventures, when required, are unlikely to proceed smoothly.

A unifying observation from this case study is that the U.S. military lags in its proficiency at the beginning of any conflict that relies on COIN-specific air power capabilities. The Air Force, which along with the Navy is culturally more focused on strategic capabilities (long-range bombers, missiles and shooting down advanced enemy aircraft) than the Army and Marines, is culturally averse and historically slow to adapt to COIN-specific missions. However, because interdependence existed when combat began, it served as a mechanism to force joint cooperation.

Corum and Johnson have noted that the Air Force is neglectful in both its history and doctrine dealing with COIN-related conflicts.[1272] Drew is more blunt, arguing that the "Air Force has not effectively accounted for the realities" of smaller wars in its theories and has ignored the phenomenon of COIN "as much as possible."[1273] This includes one of the key air power requirements for effective COIN: close integration of air support (both attack and reconnaissance) in support of ground forces. This may go unnoticed during peacetime and support the strategic preferences of the Air Force, but the neglect diminishes the air service's relevance and professional credibility whenever COIN warfare emerges as a requirement. Unanswered, questions about Air Force credibility and intent threaten its ability to act autonomously, which is exactly what happened to the service when Secretary Gates questioned its commitment to UAV ISR.

A pattern has emerged from several conflicts in which the U.S. has participated: the Army and Air Force attempt to integrate air power in support of ground forces to the dissatisfaction of both services. After a period of tactical and operational catch-up, the Air Force integrates an air-ground control system that better meets the needs of ground commanders. The Army never expresses complete satisfaction with the system, makes public claims that the Air Force does not

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[1272] See Corum and Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists*, 4. Although these authors have published the only book on the subject of air power applications in COIN, it is noteworthy that neither has been asked to speak in any Air Force professional military education forum since its release (Johnson, W. interview, 5 December 2013.)
[1273] Drew, "Air Theory, Air Force, and Low Intensity Conflict: A Short Journey to Confusion," 321.

provide sufficient support to ground missions, and seeks greater autonomy to develop its own air platforms. The Army may advocate for the Air Force to continue operating single-role CAS platforms rather than trying to rely on aircraft that perform other missions as well. Rhetoric claims that inter-dependence is out of balance, with the Air Force not meeting the combat requirements of the Army, spurring demands for more overlapping capability.

After attaining some more latitude to pursue aviation capabilities, the Army invests some resources but makes a limited, evolutionary step forward. The Army typically discovers it does not enjoy operating additional air assets and struggles to integrate newfound organic capability. By the end of the conflict, an uneasy truce about roles and missions ensues between the two services. As conflicts decrease in intensity and end, focus quickly evaporates from COIN-specific air power issues, though Congress will probably hold hearings and ask if the services own the proper platforms and technology to facilitate cooperation.

This trend occurred in World War II, the Korean War, the Vietnam War, and the Balkan conflicts. It explains the increase in COIN-specific air power capabilities that the Air Force developed in direct support of ground forces during the Afghan and Iraqi conflicts. Inter-service competition to appear competent at providing COIN air support appears to have played a role in increasing jointness. Certain Air Force communities competed for credibility, both in the eyes of the ground forces that became the focus of effort for the COIN fight as well as the larger defense establishment.[1274] In so doing, they advanced COIN air power capability and with it the chances for joint cooperation.

The same type of analysis offers partial explanation for the rise of Air Force UAV communities. Vying for professional credibility in providing UAV-ISR support that the joint force required, the professional UAV force grew rapidly and developed a solid *esprit de corps*. This happened in part because operators perceived they were making a contribution to an important, ongoing national security problem. The demand for UAV assets by all ground forces helped the rise of a previously unsung subclass within the Air Force. Andrew Abbott's argument that professional communities engage in public arguments to prove credibility and justify their status, though it does not explain all cooperation observed in COIN air power, seems to offer a point of leverage for encouraging jointness in that area.

5. Agency: Does the large number of principal-agent relationships evident in the defense establishment advance or threaten jointness?

[1274] A compelling example comes from the Air Force's F-15E community. Lieutenant Colonel Donn Yates, a pilot in the dual-role fighter, commented that the Air Force did not "get serious about CAS" until 2006. He had a central role in USAF integration with Army Special Forces units, and his perspective on the matter of COIN air power is pragmatic and detailed. He believed that close integration with Special Forces units, a mission that the F-15E practiced with diligence, served as a "forcing function" to help increase a previously disinterested community's CAS proficiency; Donn Yates (Lieutenant Colonel, USAF; commander, 334th Fighter Squadron), phone interview with the author, 2 November 2013. As discussed earlier, the F-15E is something of a bellwether for the entire Air Force's perspective on CAS competency, given its previous marked separation from the mission. Like the F-16, it is considered a multi-role fighter, though its ability to carry more fuel and ordnance gives it an ideal suitability for CAS. The presence of a second crewmember arguably makes it more suited to the potentially complex role of FAC(A). However, the Air Force always made the aircraft primarily an interdiction platform, and no F-15E crews obtained extensive CAS experience prior to involvement in Afghanistan and Iraq after 2002. To date, F-15E crews have only trained to perform the FAC(A) role in controlled ranges on an experimental basis; Nathan Mead (Lieutenant Colonel USAF; U.S. Air Force Strategy, Concepts and Wargaming Division), personal interview with the author, 14 March 2014.

Agency theory's explanatory power is limited in assessing wartime cooperation
Agency theory, as applied in this investigation, did not provide a great deal of explanatory power for determining tendencies toward or away from jointness. Investigation revealed that there was not a substantial knowledge gap between principals and agents, one of the prerequisites for agents to be able to exercise decision slack or institutional loafing. With COIN air power efforts in the Air Force, the Office of the Secretary of Defense seemed to have as much or more information than its agents, in particular the Air Force acting with responsibility for persistent, strategic ISR capability delivered by air-breathing, medium-altitude UAVs. Again, with respect to AirLand Battle and the interplay defense reform had on influencing the doctrine, there did not seem to be a significant knowledge gap between Congress and the executors of national strategy as embodied by the defense department. Without being able to show the fundamental requirement for a lack of expert knowledge present in the agent but lacking in the principal dictating policy, agency theory loses its explanatory power, even with a demonstrable preference gap.

This work is not able to write off agency theory as useful in explaining joint behavior, however, simply because of the primary sources used to inform it would not have revealed an agency gap. Archival records, verbatim congressional testimony, and interviews with senior military leaders, which constitute the top three primary sources used in this investigation, are on their face the three least likely sources to reveal what principals do not know. Congressional testimony has the most obvious explanation, but the politics of senior military leadership and the influence they have over what ends up in archival records makes it unlikely that would reveal what information they may have withheld from DoD, Congress, or other exogenous principals

During OEF and OIF, the exogenous level of the defense hierarchy (i.e., DoD under Secretary Gates) perceived intransigence within the services to respond to their policies.[1275] Policy-implementation discrepancies appeared to result from ambiguous strategic guidance or simple inability to comply as quickly as principals would have preferred.[1276] According to a rigorous definition of implementation slack, none occurred because the Air Force (acting as agent) did not have specialized knowledge that OSD (the principal) lacked. In fact, the main Air Force agent responsible for implementing DoD directives received information about his own capacity to do so from DoD.[1277]

As with other theoretical explorations, the simplest and best explanation seems to be that there is a genuine urgency in wartime pursuits that tends to erase the darker temptations to indulge in shirking. Principals follow up on the status of the policies they want implemented quickly because of this urgency, and the resultant time compression further reduces agency-

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[1275] For example, Secretary Gates found fault with the Air Force's pursuit of UAV capability and took dramatic action to make it work faster in this area. Likewise, if we limit ourselves to the lens of agency theory, some members of Congress might perceive an "implementation slack" problem with Air Force CAS platforms, leading it to use the rather blunt tools its acquisitions oversight has to address that issue.

[1276] At this writing, evidence about the Air Force's effort to produce UAV-ISR platforms and employ them in the CENTCOM AOR is too mixed to draw a conclusion proving or disproving implementation slack. See sub-section 7 of this analysis for more details about this issue. Briefly, there was a change in signal from OSD about the urgency for UAV-ISR between the Rumsfeld and Gates tenures. The Air Force also claimed that it was limited by production capability, not any internal obstacles, and that Gates did not hold the Army to the same standard to field UAV-ISR platforms; Tirpak, "Gates Versus the Air Force," 55. On the other hand, Air Force sources do admit to internal bureaucracy that inhibited the fastest possible roll-out of additional UAV-ISR CAPs; Deptula interview, 5 December 2013.

[1277] Deptula received advice from OSD on how fast the Air Force should be able to produce UAV CAPs based on its resource mix of aircraft and trained personnel; Deptula interview, 5 December 2013.

behavioral opportunities. It will probably always be tempting for exogenous or meso-organizational levels of the defense hierarchy to look for agency implementation slack within the services, especially in the face of military failures or setbacks. This case-study analysis argues that Occam's razor removes any such accusation against the Air Force in the case of COIN air power pursuits during OEF and OIF. Though Secretary Gates clearly was not pleased with the Air Force's effort in deploying more UAV ISR—becoming directly involved in altering its behavior—agency theory does not strictly apply because the service was not able to pursue its own agenda unobserved by the principal who wanted a different course of action.[1278]

B. Specific Theories and Descriptions of Military Interaction
1. Military Innovation: Do the sources of military innovation advance or hinder jointness? Do crisis conditions advance or hinder jointness?

Wartime innovation tends to advance jointness
Military communication and coordination mechanisms change with equipment, technology, and fighting styles new to each era. The work to ascertain and implement appropriate methods to match the character of war will always fall to commanders in combat and their subordinates on the battlefield. In this arena, the efforts of individuals have had a disproportionate effect on the capability of the entire force.[1279]

Individuals interviewed about the development of COIN air power during this era identified two consistent motivations for the materiel and procedural innovations described in this chapter. The first was the motivation of Air Force and Army personnel who recognized a need for improved capabilities and procedures. These individuals documented shortcomings, proposed remedies, and returned to their home units (or made unscheduled stops hoping to get a glimpse of cross-service capability) before and after deployments.[1280] The efforts were personal, but not without formal service support. While it is true that an individual Airman introduced the utility of Rover video feeds to Marines fighting in Fallujah, for example, that same Airman had immediate and remarkable help from the Air Force secretary when he learned of his efforts. Though not a 'maverick' in the traditional sense of the term, Greg Harbin's experience in propagating Rover technology shows how a champion of technology can succeed in eliminating

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[1278] One could argue that Gates was addressing a type of implementation slack with which ACC was attempting to saddle Lieutenant General Deptula, but the point is moot because the principal agency sought and attained compliance from the agent.

[1279] Coningham was successful in improving a deficient CAS system in North Africa because of a host of fortunate coincidences. In addition to having extensive theater experience and being placed in a command position that allowed him to address the issues, he was able to draw on his own communication and interpersonal skills to achieve support for or acquiescence to his ideas from the influential theater commanders. Likewise, the tenacity of Quesada, with support from Patton, to continue to work out the unique problems of CAS in support of a hectic Allied advance (even imperiling his own safety) went a long way toward earning the respect and admiration of associated ground commanders; see Hughes, *Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II*, 227-30.

[1280] Rebecca Grant described how Army CWO-2 Christopher Manuel visited Big Safari at Wright-Patterson Air Force Base while he was on leave in Dayton, Ohio in late 2001. Upon learning that his soon-to-be-deployed unit would be searching caves in Afghanistan, Manuel stopped by to see if he could take his unit a means of viewing *Predator* video feeds while doing so. Grant, "The ROVER," 40.

a "reverse salient" more quickly with the sponsorship of senior leaders within the military hierarchy.[1281]

    The crisis situations that arose in combat appear to have been a driver of joint cooperation. According to Joseph Campo, the urgent combat demands of both SOF and conventional Army units drove the development of additional UAV capabilities after 2005. Expressing frustration through their chain of command, the ground commanders made known their need for additional unmanned sensors and weapons-delivery platforms to pursue the COIN fight in Iraq and Afghanistan. Campo summarized the shared sentiment of those supported by UAVs in those two theaters: "We need more of these, and the Air Force isn't giving us enough." He described times, singling out 2006-2007 and the "ISR surge" of 2011 "where the Air Force seemed reluctant to support the Army and the war in Afghanistan specifically with an all-out blitz of capability and support because we weren't very interested in that war."[1282] In Campo's opinion, the urgency of the ongoing ground wars ensured the complaints reached the ears of Secretary Gates, who in turn pushed for faster development of capability.

    The substantial number of Army UAVs procured during the conflicts reflect another indirect source of pressure on the Air Force to increase its ability to provide ISR support or risk losing any semblance of control over the battlefield airspace structure, reminiscent of Coté's concept that inter-service rivalry drives military innovation. This is another facet of shared capability. From this vantage, Army pursuit of UAVs may have served as an incentive for faster Air Force growth of unmanned systems.

Emergence of a recognized career path and command track
Earlier discussion mentioned the coalescence of interests among UAV operators, ground forces, and the greater defense establishment. Through Rosen's lens of military innovation, the fact that the Air Force established a large number of squadrons, groups, and wings with which to operate UAVs constitutes a new concept of operations and creates paths to command. This meets his most important criterion for the entrenchment of peacetime innovation.[1283] In the late 1990s,

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[1281] The actions of Harbin and others who fought for Rover because they identified a surplus of data in the networked battlefield but a dearth of ways to exploit it tactically can be thought of as actors who identified a "reverse salient" of digital expansion and worked to cause a system to coalesce that addressed that deficiency; see Hughes, "The Evolution of Large Technological Systems," 73. Combining Rosen's prediction of the primacy of technological invention in wartime with the concepts of socially constructed technological systems, one should expect the opportunity for this type of leadership to emerge frequently in wartime, as it appears to have here.

[1282] Campo Interview, 19 November 2013.

[1283] The apparent contradiction of highlighting a pattern of peacetime innovation in a system that coalesced to maturity during armed conflict reflects the dual nature of DoD leadership observed during this war. It also points out that there has not existed a clear peacetime-wartime demarcation since 1945. As noted earlier, some senior military officers interviewed for this work expressed frustration that they were "trying to fight a war" while the DoD (under Defense Secretary Donald Rumsfeld) was pushing a defense transformation vision suitable only for peacetime. While the Air Force has met Rosen's peacetime innovation test, the "new measure of strategic effectiveness" he finds for successful wartime innovation is quite debatable; Rosen, *Winning the Next War*, 96. DoD leadership seems to have driven a metric of 65 medium-altitude UAV orbits, but Air Force leaders have recently argued that this total is a short-sighted tactical measure that diminished the strategic effectiveness of UAV weapons systems; Lee, "USAF Debates Reduction in UAV Orbits." However, to the extent that the technology is a valuable innovation, the existence of an enduring Air Force UAV career field where one did not exist before may justify the means used to obtain it. The fact that UAVs are mostly used to gather intelligence conflicts with Rosen's observation that war "makes intelligence collection difficult;" Rosen, *Winning the Next War*, 110. There is wide consensus among ground-force commanders that UAVs are invaluable to the successful execution of their COIN missions; Jeffrey Kappenman, "Army Unmanned Aircraft Systems: Decisive in Battle," *Joint Forces Quarterly*, no. 48 (2008): 23.

Fogelman and the Air Force with him took initial steps toward creating a career path for UAV operators, standing up the 11th Reconnaissance Squadron at Indian Springs, Nevada, and the first Air Force UAV unit in existence since 1979.[1284] With two conflicts to support through 1999, the technological challenges of position location solved by GPS, and institutional support from the Air Force, UAVs were poised to blossom, but long-lasting armed conflicts in the next decade enabled the UAV enterprise to take root.

On balance, there appear to be a variety of paths for pursuing jointness that present themselves under the rubric of military innovation. Whether spurred via endogenous, meso-organizational, or exogenous stimuli, the technological improvements to the application of air power in COIN during the era examined seem to ring of success. The preponderance of examples consisted of endogenous innovations later parlayed into solutions by "heterogeneous engineers" working in meso-organizational contexts to enable greater joint cooperation.[1285] This is consistent with Rosen's characterization of wartime innovation, confirming its explanatory power in that particular circumstance. Since successful innovation leads to additional military options, the nature of the inquiry is one likely to lead to positive conclusions. Counterfactual speculation alone could address questions such as, "Did wartime entrenchment of *Predator* and *Reaper* impinge on the development of more effective UAV platforms?"

Such questions are beyond the scope of this investigation. However, since so many technological innovations appeared during this era that improved the quantity and quality of joint cooperation, the study concludes that the improvements usually associated with wartime innovation have dual promise with respect to jointness: 1) they serve to promote trust (an Air Force officer helping to call down an air strike for a pinned-down Marine battalion with a new system can go a long way to healing damaged relationships) and 2) the pursuit of trust itself is a reason to further propagate new systems (if one battalion appreciated Rover, so would other Marines and so would other Army units). The fact that both aspects nest neatly into an American tendency to seek technological solutions to the social problems of war gives it particular explanatory power for this case study and makes it useful to the practitioner of jointness.

2. Civil-Military Relations: Which leads to better joint cooperation, civilian control of the military via objective means or control via subjective means?

The Confusion of Strategic 'None'-ism
The "most fundamental" problem addressed by the study of civil-military relations in democracy is how to retain legitimate governmental control of an armed subgroup that is empowered to commit violence on behalf of the government.[1286] The intent is to create a military institution that answers to the direction of the government but does not exploit the agency gap of its delegated authority in the pursuit of extracurricular war, undue political influence, threats, or coups. As Eliot Cohen described, this fundamental civil-military concern has not yet plagued American history, nor did this study find it to be a factor in developing COIN air power. Instead, the question of what the civil authorities' intent *for the military to do* was of more significant concern. The most plausible reasons for overall U.S. involvement in Afghanistan and Iraq

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[1284] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 542. A few short years after the Air Force revived its UAV interests via *Predator*, OSD disbanded its office with executive authority for UAVs, leaving the Air Force the predominant player.
[1285] See, e.g., Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," 111-14.
[1286] Cohen, *Supreme Command*, 241.

included regime change to stop the harboring of international terrorists and regime change to limit the spread of weapons of mass destruction, respectively.[1287] Most scholarship seems to accept the terror nexus in Afghanistan as a legitimate military aim; the pre-emptive motivation in Iraq receives mostly criticism.

After the initial regime-change steps, however, an enduring national vision seemed lacking. Fred Kaplan charged that Secretary of Defense Donald Rumsfeld in Iraq did not plan for "securing and stabilizing the country after the capital ha[d] fallen—because he didn't think it would be necessary."[1288] Detailed planning for Afghanistan was even more hurried and less calculated. Fred Kagan described Rumsfeld's acquiescence of a CIA-developed plan for post-9/11 retribution in the absence of any reasonable planning effort from General Tommy Franks and CENTCOM. But no plan took into account reasonable estimates of Afghan strength and likely responses, nor did the defense establishment think through the issue of how it would continue to disrupt and destroy terror networks after it dispersed an unpopular Taliban government.[1289]

Students of strategy may be forgiven for thinking that shooting wars should bring about some clarity. They offer the certainty of Huntington's strategic monism, but without the risk of incorrect prognostication about the next threat—it is obvious who the enemy is *right now*, after all. Yet OEF and OIF, particularly their COIN phases, did not provide the same clarity. Another observation from Kagan helps explain this: revolutionary war is not a Clausewitzian "duel;" it is rather a "triangular struggle" pitting two sides (along with an interloper when a helping nation like the U.S. is involved) in competition for the respect of the population.[1290]

The upshot was unclear strategy throughout both OEF and OIF. Battles played out in the media between senior military leaders, particularly at the outset of OIF in 2003, portrayed an executive branch focused on a strategy that used a small military footprint to ensure regime change, relying later on existing national institutions to stabilize the country. This approach, ideologically led by Rumsfeld and Vice President Richard Cheney, contrasted with a more intensive COIN strategy that recognized and planned for internal stabilization after MCO using U.S. forces.[1291] Similar debates endured in Afghanistan, arising during Gates' tenure and after the 2008 presidential election. Again, the tension was between two strategies, labeled 'counter-terrorism' (CT) or 'COIN.' Vice President Joe Biden was a chief proponent of the former and its smaller troop requirement; the latter called for a higher commitment of U.S. forces to succeed.

According to Gates' portrayal of the new administration, the executive branch expected senior military leaders' estimates to favor a COIN strategy and "jam" President Obama to accept higher troop levels, a political liability.[1292] Defense-establishment infighting then ensued, including the ignominious relief of the Afghan senior commander, General Stanley McChrystal, over ungenerous comments about the administration.[1293] The lack of grand strategic guidance in the CENTCOM AOR thus continued, ultimately causing some military leaders to look back upon

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[1287] These reasons are articulated in Karl P. Mueller et al., *Striking First: Preemptive and Preventive Attack in U.S. National Security* (Santa Monica CA: RAND Corporation, 2006), 101-05.

[1288] Kaplan, *Daydream Believers: How a Few Grand Ideas Wrecked American Power*, 49.

[1289] Federick W. Kagan, *Finding the Target: The Transformation of American Military Policy* (New York: Encounter Books, 2006), 290-300.

[1290] Ibid., 367-68.

[1291] Shanker, "New Strategy Vindicates Ex-Army Chief Shinseki."

[1292] Gates, *Duty: Memoirs of a Secretary at War*, 350.

[1293] Helene Cooper and David E. Sanger, "Obama Fires Afghan Commander, Citing Need for Unity in the War," *The New York Times*, 23 June 2010.

conflicts there with regret. Lieutenant General Deptula was adamant that joint doctrine had been improperly applied in establishing command-and-control structures for Afghanistan and Iraq, reflecting the Army's desire for relevance rather than an analysis of national strategic priorities, a point upon which several other students of national strategy—including at least one prominent Army flag officer—agree.[1294] General North seems to have tacitly asserted, with a series of behaviors that snubbed regional joint force commanders, similar sentiment. While the experience was certainly deleterious to jointness in the amount of inter-service friction it created, it is impossible to reject the possibility that the root cause was a lack of strategic purpose, even a lack of objective civilian control over the military. Deptula, in his role as an air-power advocate, has continued to reiterate the theme that air power must be aligned with strategy, not used in place of it, and he has remained outspoken in his criticism of "wars based on the tenets of occupation and attrition."[1295] Considered in their entirety, a lack of external direction over the course of OEF and OIF seems to have emboldened the military services to quarrel about each other's relative value and to attempt to score points on the merits of the individual service strategies that served as surrogates for the lacking exogenous direction.

This is not to say the Secretaries of Defense during this era neglected to exert control over the military services and the larger defense establishment over which they had authority. Both Secretary Rumsfeld, renowned for his detail-oriented 'snowflakes' and Secretary Gates, who without hesitation replaced a sitting Chairman of the Joint Chiefs of Staff as well as the Air Force's senior civilian and military leaders, discharged the duties of their office in a way that left no doubt about the power they wielded. The next analysis looks at how this kind of control may have affected the military services and the pursuit of jointness.

Objective, albeit uneven, civilian control
The most explicit objective control exercised by the executive branch over the military during this era with impact on air support to COIN involved the quantity of UAV-ISR provided by the Air Force to support ground forces. By 2008, the Air Force had attracted a good deal of exogenous interest in its pursuit of UAV platforms, most of it negative and originating from the Secretary of Defense himself. On a visit to Creech Air Force Base to observe flight training operations for upgrading crews, witnesses corroborated that Gates asked, "Why are these aircraft

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[1294] General Deptula: "I would tell you that we met our critical national security needs by December 31, 2001, and after that should have been gone [from Afghanistan], but the Army was just arriving. Senior defense leadership had a tendency to get enamored in the ongoing fight, to base decisions off of ongoing operations rather than to lead with national strategy;" Deptula interview, 5 December 2013. David Johnson: "I agree with that [assessment];" Johnson interview, 24 February 2014. While Deptula may have been one of the first to assert such an opinion, Army officers, once unencumbered by the constraints of office on their public comments, have shared a similar sentiment. Retired Army Lieutenant General Daniel Bolger wrote: "Both wars [Afghanistan and Iraq] were won, and we didn't know enough to go home" after about six months; see Mark Thompson, "A General Writes the First After-Action Report on the Wars in Afghanistan and Iraq: *Why We Lost*," *Time*, 22 May 2014, online review of Bolger's forthcoming (November 2014) book Why We Lost: A General's Inside Account of the Iraq and Afghanistan Wars. http://time.com/109981/general-wars-afghanistan-iraq-why-we-lost/.
[1295] In e-mail to the membership of the Air Force Association, Deptula wrote, "Aerospace power is a tool whose successful employment demands alignment with a prudent strategy. Raw kinetics, no matter how powerful, cannot stand in place of a realistic, actionable plan that aligns a desired outcome with available courses of action. Taken in this vantage, it is critical to determine concrete objectives the nation seeks to attain and then consider what tools and employment methods are best positioned to yield these effects without projecting undue liability and vulnerability— i.e. further wars based on the tenets of occupation and attrition;" Deptula e-mail #3, 5 June 2014.

not in theater?" with visible irritation.[1296] Gates, echoing the same sentiments that ground commanders had expressed, shared his concern about a lack of UAV capability in public forums in 2008. "My concern is that our services are still not moving aggressively in wartime to provide resources needed now on the battlefield," he said. "I've been wrestling for months to get more intelligence, surveillance and reconnaissance assets into the theater. Because people were stuck in the old ways of doing business, it's been like pulling teeth. While we've doubled this capability in recent months, it is still not good enough."[1297]

Gates' post-secretarial memoir also described his frustration with perceived Air Force foot-dragging to increase the number of UAV CAPs serving the Central Command region from the eight present in mid-2007. He was dissatisfied with Air Force plans—then under the leadership of General Moseley—to "far too slowly" increase the CAP total to 18 by 2008. His critique of the UAV handling lies adjacent to an observation that "every time Moseley and Air Force Secretary Mike Wynne came to see me, it was about a new bomber or more F-22s."[1298] Gates also expressed incredulity about the Air Force's use of its available UAV assets, describing in detail his personal involvement in addressing a perceived shortage of UAV assets available in the combat theaters.

Nearing the end of his tenure as Defense Secretary, Gates again demonstrated his willingness to personally influence the Air Force's stewardship of UAV assets. He directed an ISR surge to correspond with the opening of the spring 2011 fighting season in Afghanistan. The concentrated effort drove early or expedited rollouts of several new COIN and counter-IED UAV programs. This included Gorgon Stare, a wide-area surveillance program useful for monitoring civilian populations and preventing IED attacks. The ISR surge witnessed the unprecedented step of standing down both the Air Force's Weapons School training for UAV expert operators as well as the formal training unit that produces operators with basic-level qualifications. The cadre from both organizations ceased training students for several months to add an additional five combat CAPs to the war effort in Afghanistan. As with all short-term surges that cut into training assets, the cost of the temporary gain was a dearth of qualified operators in future months and years.[1299]

Gates remained critical of the Air Force's UAV record to the end of his tenure, warning the service not to perceive his departure as an opportunity to slide back to "real Air Force normal" postures on unmanned aircraft.[1300] The effort reads like civilian intervention in a hidebound, unresponsive military bureaucracy focused on trivial priorities *à la* Barry Posen. Gates could not have put a finer point on it without comparing F-22s to horse-mounted cavalry.

There is another facet to Gates' forceful intervention to push the Air Force in its development of UAVs, though. According to General Jumper, the attention reflected a complete turnaround from the policies of the Rumsfeld defense administration:

"OSD has blamed the Air Force for not supporting UAVs, but I had hundreds of millions of dollars set aside in the Air Force budget for Global Hawk and Predator. Money I had in the budget was taken out by

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[1296] *Predator* operators who were present at Creech or spoke to eyewitnesses independently verified the story. Gates' memoir reflects essentially the same thought; see Gates, *Duty: Memoirs of a Secretary at War*, 132.

[1297] "Remarks to the Air War College," speech transcript, 21 April 2008, http://www.defense.gov/speeches/speech.aspx?speechid=1231.

[1298] *Duty: Memoirs of a Secretary at War*, 129-30.

[1299] Campo Interview, 19 November 2013.

[1300] Julian E. Barnes, "Gates Warns on 'Real Air Force Normal'," *The Wall Street Journal*, 4 March 2011. http://blogs.wsj.com/washwire/2011/03/04/gates-warns-on-real-air-force-normal/.

OSD because they wanted to put it into space programs that were never, never going to work: transformational communications and space-based radar. To them, that was 'transformational.' I wanted to double down on UAV capability—both Global Hawk and Predator—when I was Chief of Staff of the Air Force, and Secretary Roche supported me. But we failed when money was taken out of the budget for 'transformational' things that were never going to be built."[1301]

Documents reviewed for this research confirmed Jumper's account, as do individuals who worked in both the Air Force UAV office and its budgeting section.[1302] Ironically, the Air Force officer communicating to Congress about increased *Predator* capability and requesting the budgetary authority to do so was none other than then-Major General Moseley, whose alleged intransigence over UAVs would later so irritate Gates.[1303]

These points do not absolve the Air Force of the need to respond to Defense Department directives, or excuse internal Air Force friction that inhibited UAV development, which existed with certainty. (Deptula's account of Air Combat Command's reluctance to push UAV development may have alone justified Gates' work to break through a recalcitrant internal service bureaucracy.)[1304] On the other hand, senior leaders' reactions to unambiguous objective control exerted over the Air Force suggest that the action Secretary Gates took to relieve both senior leaders did some amount of harm to civil-military relations, with a particular concern being that services would be deterred from giving frank assessments that differ from a defense secretary's opinion.[1305]

Gates' intervention increased the number of UAV CAPs over a short span. In so doing, he may have slowed the normalization of the training system (a relatively minor consequence) or crushed the willingness of Air Force senior leaders to offer contradictory strategic advice (a major negative consequence). The brief lesson from consideration of civil-military relations as framed here is that an individual leader, particularly at the exogenous level, can have immediate impact on a military service. Such intervention to force faster development of joint capability will likely yield quick results. What may not be apparent is an action's effect on the service over the long term—an *ex officio* interview with Moseley left no doubt that Gates' treatment of the Air Force embittered many in that service.[1306] If successive defense civilians push markedly

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[1301] Jumper interview, 16 December 2013.

[1302] Clark, S. Interview, 17 and 27 November 2013.

[1303] T. Michael Moseley (Director, Legislative Affairs), official letter to Congressman Stump (Chairman, HASC) re: "launching Hellfire missiles from Predator Unmanned Aerial Vehicle (UAV)", 11 July 2001; ibid.; ibid.; Larry W. Northington (Deputy Assistant Secretary of the Air Force (Budget)), official letter to Congressman Murtha (ranking member, HASC) re: "launching Hellfire missiles from Predator Unmanned Aerial Vehicle (UAV)", 11 July 2011.

[1304] General Deptula recounted his difficulty in getting internal bureaucracies to respond to his direction when he was director of Air Force ISR: "ACC did not advance our case. I would go to them in 2007 and say, 'What capacity do we have for additional UAVs?' There were seven [orbits] and they said, 'We can do eight and then we can do nine.' I would go back and talk to OSD; they would look at the resources we had available and say, 'No, you can do ten, twelve, fourteen...' There was always a constant struggle with ACC, not because they couldn't do more, but because they didn't want to. I'm not saying they were *devious*, but they didn't want to push the edge of the envelope, which is what OSD was directing at the time. It was embarrassing for me to believe what ACC told me, then to hear from OSD analysts that based on the training capacity, equipment, etc. that, 'You can do this;'" Deptula interview, 5 December 2013.

[1305] General Deptula: "It was unconscionable to remove both the military and civilian leadership of the same service simultaneously. The message that was received was, 'Don't speak truth to power, at least not while I'm the power, because if you do, I'm going to shoot you in between the eyes.'" ibid.

[1306] In the interview, Moseley raised an oft-told story about Gates being slighted by a senior officer when he was an Air Force Second Lieutenant in Strategic Air Command, citing it as an underlying reason for Gates' apparent

different agendas, military leaders may struggle to reign in bureaucratic inertia imparted by previous leadership agendas. They in turn may be confused or frustrated when new leadership fails to grasp their difficulty in leading the called-for changes. This raises concern from a Huntingtonian perspective: ultimately, weakened service leaders cannot make strong contributions to enhance defense options and joint fighting, making unfettered civilian interference an inhibitor to jointness.

3. Service Cultures: How do services' dominant cultures advance or hinder joint cooperation?

Service culture differences tend to inhibit joint cooperation
The question of endogenous cultural impact on jointness presents a clear paradox in both Afghanistan and Iraq, one that is not limited to any individual service. Shy and Collier summarized it well long before these particular conflicts began: "Adapting quickly to technological change comes readily to European and American armed forces. But learning to cope with a very different kind of warfare, in which words do more to mask or distort military reality than to reveal it, has proved far more difficult."[1307] It is this overall state of strategic inertia, one that favors MCO, that sets the context for U.S. response (and that of its mainly European allies) in the conflicts. The tendency affected the entire defense hierarchy, including the exogenous level, but differentiation first became evident among the individual services as their various levels of strategic flexibility shone through. Before tackling esoteric questions of strategic inertia, though, we begin with analyzing a more basic cause of inter-service friction.

Just as views of doctrine were critical in understanding the development of AirLand Battle in Chapter 3, the institutional 'personalities' of the Army and Air Force merit attention in unpacking COIN air power. The Mitchellian instinct toward the sort of 'chest-thumping' observed after Desert Storm and the Balkans conflicts may have grated on the Army, whose culture, as Donnithorne argues, tends toward egalitarianism, idealizes teams over individuals, and is subservient to a fault to civilian leadership.[1308] After Desert Storm and the Balkans conflicts, not all was harmonious in the realm of jointness. As one officer fully immersed in the effort put it, "success in the Gulf and then the Balkans had made the Air Force both confident and cocky."[1309]

Human nature being what it is, one can imagine how the *Canberra Times*' editorial that "bombs alone forced the capitulation of the government in Belgrade" and comments like it swelled the heads of air power advocates and acolytes.[1310] Yet in spite of the fact that most informed observers have concluded, "air power alone does not produce victory," resentment over air power advocates' repeated claims for the holy grail of military strategy does inevitably pile

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antipathy toward the service: "he worked for some cigar-chomping fighter pilot who…I guess didn't give him the recognition or praise he thought he was entitled to;" see Tirpak, "Gates Versus the Air Force," 56.
[1307] Shy and Collier, "Revolutionary War," 821.
[1308] Donnithorne, "Principled Agents," 181-222.
[1309] Gersten interview, 22 October 2013.
[1310] The article, a retrospective discussion of NATO operations over the Former Republic of Yugoslavia, oscillated between hubris and sobriety, also highlighting that, "air force offices were always particularly careful to limit their claims about what could be achieved by bombs alone;" "Bombs Aren't a Magic Bullet," *The Canberra Times*, 21 June 2011.

up over time.[1311] Whatever one's opinion of claims about air power efficacy might be, prominent vocal spokesmen for the Air Force provide a communications stream that runs counter to a prevailing Army ethic. If the Army has a "nationally-focused commitment to subservience," a cultural tendency that has grown up over centuries of aversion to standing armies, and a commitment to being "apolitical servants" of the American people, it does not suffer Air Force braggadocio without frustration.[1312] In the American conflicts that followed Kosovo, the Army would soon have cause to give vent to some of that frustration.

Different habits of warfighting, starting at the tactical level, also drive wedges among the joint force. The Air Force's expeditionary culture differs from the Army's, favoring deployment of large units *en masse* and returning them at the same time. The Air Force generally attempts the same approach with the flying squadrons it deploys to combat, but it otherwise tends to provide forces in a much more piecemeal fashion, adopting the stance that someone trained for a particular mission is just as good as another, irrespective of the relationships an incumbent has developed. In reality, the culture is not this stark, but the experience of an Army commander in Anaconda who "lost my JTAC" a few days into the battle and met the replacement while still "hunting Al Qaeda in the mountains" drives home the point that Air Force modularity runs counter to some of the unit integrity other services take for granted.[1313]

The same perception, that of a cool detachment from the people who are 'in the fight,' affects relationships at the operational level, too. There did not seem to be a way around an Army perception that the Air Force 'runs the war by remote control' when its main component headquarters was situated outside both countries in which hostilities occurred. When Lieutenant General North's heedless behavior, including his disdain for established joint command authorities within Afghanistan and Iraq, confirmed that perception, any observer could easily grasp the resulting meltdown of inter-service good will. Lieutenant General Hostage, in ameliorating some of the broken relationships he found after North's tenure, recognized the need for an empowered ACCE with a "seat at the table" in the warfighting headquarters as opposed to a communications liaison who had to call back to the CAOC (or Shaw Air Force Base) to get a decision on even the smallest of operational questions.[1314]

The opposite perception, approaching that of a zealous need for presence, reflects on the Army in the eyes of outside observers. Some (likely Air Force cynics, according to the author who made the observation) speculated that the Army, "having sat out every American combat action since Somalia," insisted upon conventional participation in the Afghan conflict "on parochial grounds."[1315] This does not hold up to close scrutiny, as the request for more conventional troops to augment Afghan fighters came from Secretary of Defense Donald

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[1311] James Dubik, "Finish the Job in Libya," *The International Herald Tribune*, 27 April 2011. Dubik's context for his remarks was the 1999 Kosovo conflict, and he correctly remarked, "It took the threat of a ground assault and the erosion of Russian support for Serbia to tip the balance in NATO's favor."

[1312] See Donnithorne 2013, p. 182 & 184.

[1313] LTC Kraft: "One point of tension was, though he [SrA Achey] was my ETAC…we came back out after less than 24 hours at Bagram for a re-fit—I had a platoon that was combat-ineffective because of the number of casualties it had sustained. We came back out and continued to do movement-to-contact into the mountains, looking for the enemy. And Achey, my ETAC, comes up to me and says, 'I gotta go.' I said, 'What do you mean?' He said, 'I gotta go. My time's up here.' I was shocked. The guy that replaced him was another solid JTAC who did a great job…I just couldn't believe that here we were in the middle of the biggest conventional fight since—what, Somalia?—and I'm losing my JTAC while we're looking for the enemy…I just thought that was a bad call."

[1314] Hostage, "A Seat at the Table," 18.

[1315] Lawrence F. Kaplan, "Troop Movement," *The New Republic*, 25 March 2002. http://www.newrepublic.com/article/politics/war-afghanistan-vietnam-gulf-al-qaeda.

Rumsfeld. While battalions from the 10th Mountain Division originally deployed to receive and provide security for the special operations forces conducting operations throughout Afghanistan, they became a convenient option to provide the additional troops required to prevent the disappearance of more Al Qaeda fighters.[1316]

A year after Operation Anaconda, Hagenbeck's recollection of the operation evoked mistrust on the basis of service values that appear to be at odds. Builder and Donnithorne both identified the ability to hold territory as a core Army value, one that Hagenbeck invoked. He also directly critiqued the central Air Force value of technology. "We firmly believe if you're going to control terrain and populations, you've got to do it with a force that can be sustained over time. I view technology as an enabler, and we want more and more of it. But I don't think it is ever going to replace the soldier on the ground."[1317] Though evidence available cannot prove it, conscious or subconscious desires to assert Army independence from the Air Force may have driven Hagenbeck and his staff away from more thorough joint planning of air power for Anaconda.

Questions of values and motivation do not affect only Air Force-Army relationships. A trip report prepared by a joint Air Force-Marine Corps working group revealed deep-seated tensions over command and control between those two services as well. The report cited "lack of trust" between the two services' air control systems for air-ground command and control; it found that "non-standard command relationships" (propagated by Lieutenant General North) and "*ad hoc* processes not described in joint doctrine" contributed to "confusion over joint C2 [command-and-control] relationships and the position of the JFC" in Iraq.[1318] Again, the unhealthy state of affairs underlines the impact one personality can have on joint relations, in this case for the worse. The marked difference between service preferences and habits for operational command and control merits further examination, though.

Command-and-control preferences impact jointness, usually for the worse
Letters exchanged in 1976 and 1977 among between General William DePuy, the Army's Training and Doctrine Command (TRADOC) commander; General Robert Dixon, the Tactical Air Command (TAC) commander; and General David Jones, the Air Force Chief of Staff, showed the services' post-Vietnam reversion toward their respective command-and-control preferences. Dixon complained to DePuy about the loss of connection between the air-ground command-and-control node and the highest army echelon; DePuy sympathized, though the remedies he proposed did not convince Dixon.[1319]

The extent of Dixon's frustrations surfaced in a letter to Jones in which he found "TRADOC not much concerned with organization and operations from a theater perspective or the functions which take place above corps—apportionment, allocation and distribution of air support sorties."[1320] Dixon recognized that the key Air Force-Army CAS coordination relationship had evolved since WWII to be at the field army level, and that new Army emphasis on empowering corps and below for combat operations threatened to make that level of coordination moot for the Army. Certainly the Air Force completed the separation by its

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[1316] Kraft interview, 30 January 2014.
[1317] Loeb, "General Defends Tactics in Afghan Battle."
[1318] *CENTCOM AOR Trip Report.*
[1319] Letter to General Robert Dixon; K168.03-2342 Pt 3; IRIS No. 1137059; Air Force Historical Research Agency, Maxwell AFB AL; .
[1320] Letter to General David C. Jones; K168.03-2342 Pt 3; IRIS No. 1137059; AFHRA, Maxwell AFB.

emphasis on theater-wide coordination. The 'organic-versus-centralized' control dilemma again loomed large.

The post-Vietnam era, because it offered greater combat command opportunities for a certain type of pilot, ushered in a systemic change in the dominant 'monarchic' culture represented at the pinnacle of Air Force leadership. Worden chronicled the transition of fighter pilots to holding the position of Chief of Staff, noting the transition from bomber pilots after 1982.[1321] This major change from the Vietnam era alone may explain the greater Air Force drive to incorporate tactical UAVs in the Afghan and Iraqi fighting, as tactical aircrew have traditionally worked through ways to effectively support their ground-based comrades.

This change seems to bode well for jointness as it pertains to COIN air power, but a remaining obstacle still impedes better progress. At the heart of the difficulty seems to lie yet another paradox. Chapter 5 outlined two theories of command and control that seem to conflict in the realm of COIN air power. David Johnson argued that COIN warfare requires decentralized command and control of air power because it is reliant on the awareness of smaller, peripheral units to carry out the overall strategy.[1322] Lieutenant General Rew recognized the operational tension and the need to move with flexibility from centralized command and control in MCO to a more decentralized TACS during COIN operations; his model follows that of Johnson's description.[1323] In contrast, Jeffrey Vandenbussche posited that political sensitivity toward a given conflict was dependent on its relative intensity. In approaching warfare from a lens of existential versus limited-scope conflict, he prescribed centralized control for conflicts of limited political aim, reserving decentralized, "mission-type orders" for larger conflicts that constituted an existential threat.[1324] If one presumes that COIN warfare is generally low-intensity conflict, comparison between the two models becomes possible.

The paradox lies in the realization that COIN, from the U.S. perspective as invading interloper, is a non-existential threat. Terror havens aside, nothing in Afghanistan or Iraq was an immediate threat to U.S. national security, and cathartic air strikes had stilled the urgency of the terror threat shortly after 9/11. Vandenbussche also assessed a need for operational flexibility, but tied command-and-control measures to relative political sensitivity rather than type of warfare. Viewing graphical depictions of the two analyses next to each other (Figure A.1, page 481) reveals why the spectrum of operational flexibility will always remain a threat to jointness for the Air Force and Army. Vandenbussche's recommendation hews to the preferences of Air Force strategic culture, but the command and control spectrum it recommends runs counter to the one Johnson and Rew suggested as appropriate for COIN. Where Johnson and Rew recommend (and Army strategic culture favors) decentralized command and control for COIN to meet mission requirements, Vandenbussche recommends highly centralized control to account for the political sensitivity inherent in this type of warfare.

[1321] Worden, *Rise of the Fighter Generals: The Problem of Air Force Leadership*.

[1322] Johnson, *Learning Large Lessons*, xxiv.

[1323] Rew's Air War College presentation specifically mentioned the need for mission-type orders in MCO, with a shifting emphasis on "distributed air planning" to support ASOCs and TACPs as conflict transitioned to COIN and stability operations; Rew, "Rew 'Operational Flexibility' presentation," slide 8.

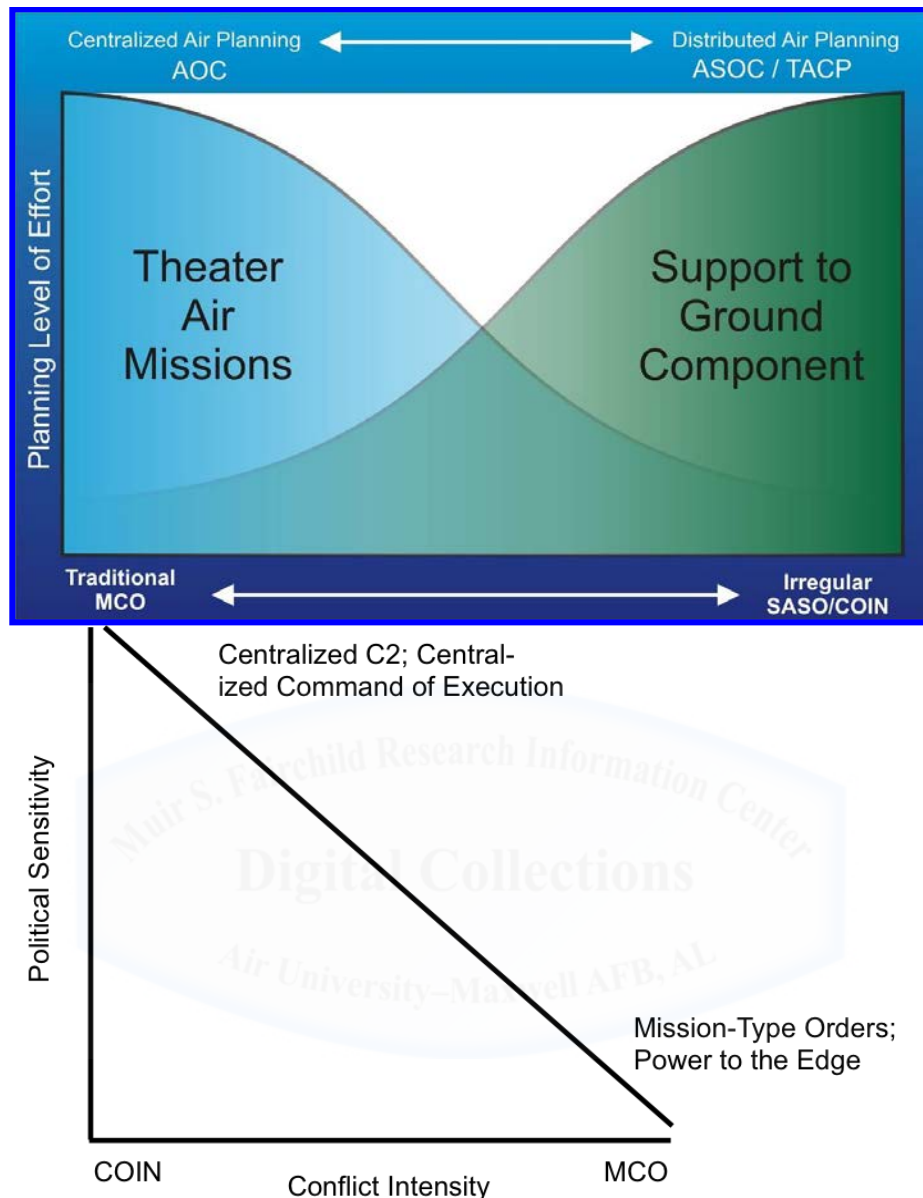[1324] Vandenbussche, "Centering the Ball," 68.

Figure A.1. Johnson/Rew (top) and Vandenbussche (bottom) command and control models[1325, 1326]

From a perspective of strategic culture, the Air Force has a tendency toward more centralized command and control when it does not perceive a serious threat, and COIN does not exceed that threshold of urgency. Ground forces, of course, tend to view the situation from the opposite perspective: they have suffered few casualties during recent MCO campaigns; deaths and maiming came in droves from the booby traps and small-arms engagements that characterize

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[1325] The graphic is from Rew, "Rew 'Operational Flexibility' presentation."; its description of command and control for MCO and COIN match the descriptions in Johnson, *Learning Large Lessons*, xxiv.

[1326] The graphic is an adaptation of Vandenbussche, "Centering the Ball," 67. In Vandenbussche's original graphic, the plot representing the continuum of command and control is depicted as asymptotic to the axes rather than a straight line. This adaptation also adds the labels 'COIN' and 'MCO,' which do not appear in the original.

COIN. Without subtle understanding of these conflicting forces, the cultural mismatch is likely to remain one of the most serious obstacles to jointness.[1327]

UAVs have become a legitimized Air Force culture
Not all service-cultural analyses portend gloom for jointness. The success of the UAV community in the Air Force, as it relates to institutional leadership and the overcoming of intra-service cultural barriers to acceptance, demonstrates a mechanism to support joint cooperation. Thomas Ehrhard applied his interpretation of James Wilson's work on organizational change to the transitional Air Force of the 1970s. Then, the Air Force enthusiastically embraced new UAV technology during a period of institutional entropy (recall that control of the service was moving from bomber pilots to fighter pilots) but lacked the rigid institutional structures needed to see them to fruition.[1328] There may be some room for parallel interpretation of an analogous development in the late 2000s. Gates' 2008 "decapitation" of the Air Force witnessed the dismissal of a fighter general (General Moseley) in favor of a mobility and special operations specialist with significant joint experience (General Norton Schwartz).[1329] Control later ceded to a fighter pilot (General Mark Welsh) in 2012.

Gates' action and rapid increase in the number of UAV orbits in its wake begs the question of whether combat necessity, DoD involvement, technological advance, or institutional tumult had the most effect on UAV development. Certainly a period of disequilibrium between monarchic and feudal structures may have existed after 2008, contributing to both adoption and entrenchment of nascent UAV technology and, more importantly, the personnel and organizational structures to sustain them.

The introduction of a new weapons system into a military service that already has established communities centered about other combat systems has attendant difficulties. Leaders of UAV units have worked to overcome significant cultural barriers within the Air Force. One example was the reluctance and hostility of fighter pilots involuntarily assigned to UAV duty. Other sources interviewed for this work recalled the difficulty the Air Force faced in developing a stable pool of pilots and sensor operators. Even General Schwartz acknowledged that the UAV force constituted an Air Force "leper colony" as it grew.[1330]

The force groped around for several years to find workable steady-state personnel systems, lurching among schemes that put least-qualified pilots of other aircraft, operators who had volunteered from non-flying military specialties after attaining flight training on their own time, and forcing unwilling fighter pilots to man UAVs. The service has settled on a hybrid-training path that gives UAV operators time in manned aircraft at the beginning of their course to develop 'air sense' before relying on simulators to learn instrument flying and airspace-control measures on the way to becoming a qualified unmanned operator. Though these Airmen wear the wings of

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[1327] The paradox begs the question, "Which type of command and control is best for the nation in leading to favorable strategic outcomes?" Many military personnel can make immature or poor decisions while believing they are acting under 'mission-type' orders, and in COIN, tactical decisions can have strategic consequences. Mission-type orders assume that tactical operators have the best sense of the situation. At the tactical level, that is true, but strategic implications are ever-present and more significant in their ramifications, which may elude the young tacticians in the field. Mature judgment is required of the kind rewarded by structured, hierarchical decision-making, and explains why David Johnson described the mission-type orders under which the Army purports to lead as "wishful thinking;" Johnson interview, 24 February 2014.
[1328] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 90.
[1329] See Tirpak, "Gates Versus the Air Force," 57.
[1330] Mulrine, "UAV Pilots."

a rated aviator, they are not qualified to fly manned military aircraft. A smaller percentage of UAV operators go straight into flying unmanned aircraft after completing standard pilot training syllabi. They retain the capability of going to fly manned platforms after an initial UAV tour.

There were cultural barriers internal to UAV squadrons to overcome as well. A UAV subject matter expert noted a lack of cooperation among individuals *in the same UAV unit*, who depending on whether they are working at a forward launch-and-recovery site or flying the aircraft from a ground station, display hostility toward the other half of the operation. He also noted an attempt by operators of the MQ-9 *Reaper*, *Predator's* larger and more heavily armed cousin, to establish a UAV culture "distinct from that of the *Predator* community."[1331] According to another UAV squadron commander, this attempt to construct cultural distinction among UAV platforms has faded as the intelligence-gathering and strike capabilities of all medium-size UAVs continue to coalesce.[1332]

The dominant leaders in the UAV community seem to be—unsurprisingly, given their early introduction to the career—those with prior experience in fighter aircraft. A typical UAV squadron, group, or wing commander is a highly qualified former fighter pilot, often disqualified from flying manned aircraft due to non-serious but long-term medical conditions. While the culture of the UAV community seems to be settling into its final form, the 'white scarf' syndrome *still* does not appear to be a threat, and UAV operators derive job satisfaction from the demand for their services in combat.[1333] UAV operators make near-continuous contributions to wartime operations, a claim that few flying manned platforms can make. The culture and morale of UAV units seem to be both stable and intact as a result of OEF and OIF.

Inter-service Dialogue and the Warfighter Talks
Having shown that superficial and deep-seated cultural differences abound, the search for jointness must probe to see if the services have viable inter-organizational means to address them. The Warfighter Talks are a series of meetings held between executive-level military leaders of the Air Force and their contemporaries from the other services. The first iteration was a meeting of the Air Force and Army service chiefs in 1965.[1334] The Army-Air Force version of the forum endured for decades, eventually inspiring similar bi-service discussions between the Air Force, Navy, and Marines starting in 1999.[1335, 1336] There is no legislative or formal DoD imperative to

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[1331] Keven Gambold is a former British fighter pilot who operated UAVs with the U.S. on an exchange tour and is now a commercial consultant in the field. The two competing elements are the Launch-Recovery Element (LRE) and the Mission Command Element (MCE); Gambold, K. interview, 12 November 2013.

[1332] Campo Interview, 19 November 2013.

[1333] The assertion is based on assessments of UAV-ISR community observers and members; Catherine A. Gambold (Lieutenant Colonel, USAF; Senior Intelligence Officer, 4th Fighter Wing), personal interview with the author, 13 November 2013; Danielsen interview, 6 February 2014. A notable and poignant exception to this general rule seems to be the MC-12 *Liberty* community, which like Air Force UAVs in previous years, is manned mostly by non-volunteer fighter pilots. An intelligence analyst returned from a recent deployment in support of MC-12 operations reported "very low morale" due to non-volunteer status, indeterminate mission extensions, and the Air Force's planned divestment of the platform; Laclede interview, 31 January 2014.

[1334] Ryan Suttlemyre, "Army, Air Force leaders meet for latest in series of high-level "Warfighter Talks"," U.S. Army, accessed 1 December 2013, http://www.army.mil/article/16685/.

[1335] Organizers attempt to arrange a meeting with each separate service annually, though scheduling conflicts or other constraints on a participating service have prevented meetings some years.

[1336] Warfighter meetings happen between the Air Force and one other service (or a unified command, the U.S. Special Operations Command) at a time; it is strictly a bi-service dialogue, not a summit that brings in more than two services at a time. "Warfighter Talks" were an Air Force-Army-only forum from 1965 until 1999, when the first Air Force-Navy Warfighter meeting occurred. Until 2010, the term indicated meetings between the Air Force and

hold the talks, so their occurrence represents an ongoing, voluntary effort for the services to hold routine dialogue with each other. This study examined the tenor and tone of the Warfighter Talks held since 2001.[1337] Though not a direct objective measure of the services' points of relative interests vis-à-vis those of the Air Force, the Warfighter Talks do offer a fairly accurate barometer of the most pressing or sensitive inter-service issues that involve the Air Force.

This investigation examined the Warfighter Talks with specific focus on COIN air power capabilities between 2001 and 2013. The Air Force's Strategy, Concepts, and Wargaming Division (colloquially called the "Skunks" for the office's role in developing strategy) arranges and keeps records of the Warfighter Talks.[1338] Based on a summary of Warfighter Talks going back to the end of Operation Desert Storm; the pertinent observations gleaned from this study's examination are as follows:

1) Warfighter talks infrequently serve as forums to address extremely contentious issues, though they may provide the opportunity to broach such topics for the first time;

2) Frequent or regular Warfighter meetings indicate that a particular inter-service relationship is going well and only minor issues require resolution;

2.1) The lack of Air Force-Army Warfighter talks between 2004 and 2008 reflects inter-service tension that the forum was unlikely to address with success;[1339]

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another service (or unified command), though the Navy began holding its own Warfighter Talks in 2010 with the Army and Marines that did not involve Air Force participation. See Stuart Munsch, "Pol-Mil Subspecialist Community Newsletter; N513: Strategy," U.S. Navy Bureau of Personnel, accessed 2 December 2013, http://www.public.navy.mil/bupers-npc/officer/Detailing/educationplacement/Documents/2011%20Strategy%20and%20Policy%20Newsletter%20Winter,%20Spring.pdf.

[1337] Clark, S. Interview, 17 and 27 November 2013. Col. (ret.) Clark has assisted in organizing and kept documentation of the Warfighter Talks since 2007. The Air Force's "Skunk Works" keeps records of the topics discussed and presentations given at all meetings. Since the discussions are by design "non-attributed" for the senior leaders involved, detailed minutes do not exist. The author was able to ascertain the tenor and tone of many Warfighter meetings via interviews with direct participants and observers, but a reviewable source for this subjective impression does not exist.

[1338] The Air Force use of the term "Skunk Works," now widely used in business to indicate an internal division working with a high degree of autonomy on advanced projects, traces its origins to Lockheed Aircraft Corporation's Development Program (ADP). The Army Air Force originally requested Lockheed to develop a jet fighter in 1943. ADP, under the leadership of engineer Clarence L. "Kelly" Johnson, was Lockheed's initiative to meet the Air Force requirement. See Ben R. Rich and Leo Janos, *Skunk Works: A Personal Memoir of My Years at Lockheed* (New York: Little, Brown and Company, 1996), 5-9. The term "Skunk Works" derives from Al Capp's "Li'l Abner" comic strip; see "Idea: Skunkworks," The Economist, accessed 2 December 2013, http://www.economist.com/node/11993055.

[1339] General Jumper confirmed this idea in an interview: "All the real work we did with the Army during that time was done day-to-day, real-time in combat, not at Warfighter. For instance, before OIF kicked off I went down to Langley to Air Combat Command as the Chief [of Staff] and we had a "chair fly" of a lot of operational concepts--how we thought everything would take off. Then we went to [Army Chief of Staff] Eric Shinseki and we said, 'Now what else can we do for you?' and he was delighted. As a matter of fact, we had some of the Army's folks there at the Langley events. We had exercised how air power would find SCUD missiles, something we had not done very well in the previous conflict. We exercised how to integrate with special operations forces, and we had work through how we were going to integrate some of our new systems…;" Jumper interview, 16 December 2013.

3) Adoption of the Warfighter format by services other than the Army and Air Force threatens to normalize them into a bureaucratic process that makes the chance for novel and contentious discussions less likely to occur; and

4) The utility, effectiveness, and frequency of Warfighter talks depend on the preferences of the convening service chiefs, who control agendas and the importance of presentations through their staffs.

4.1) General Jumper used the November 2002 Warfighter talks to broach Air Force concerns with Major General Hagenbeck's characterizations of Air Force CAS in Operation Anaconda at a service chief level, having productive dialogue with his Army counterpart, General Eric Shinseki; he also addressed Air Force students at the Army War College (at Carlisle Barracks, the site of the talks) to share the Air Force perspective on a topic that had been dominated by the Army narrative to that point.[1340]

4.2) After the issues of Anaconda had been broached at early Warfighter talks, General Jumper did not use the Warfighter forum regularly, skipping several iterations, preferring to deal with inter-service issues as they arose in the arena of combat.[1341]

The review of Warfighter revealed that the most meaningful joint cooperation during war lies in the relationships developed among in-theater leaders and operators—the air and ground forces that deploy together and have responsibility for making the air-ground system function better. Headquarters dialogue signals sincerity, but has less impact on the most meaningful 'downrange' relationships. Air Force aviators who participated in or were familiar with the difficulties encountered in Operation Anaconda and later, the intricacies of supporting 'urban CAS' in the cities of Iraq, carried 'road show' briefings to squadrons about to deploy in support of OEF and OIF. In the case of Afghanistan, seasoned CAS pilots provided immediate, in-theater instruction to aircrew new to the mission when their unfamiliarity became evident.[1342]

Depending on individual relationships, service chiefs have been able to effect joint peacetime cooperation, particularly bilateral cooperation between two services. AirLand Battle, in spite of the weaknesses it exhibited, is without question an explicitly cooperative iteration between two services. The examples of Air Force Chief of Staff General John McConnell and Army Chief of Staff General Harold Johnson in 1966 provide another example of cooperation related to the repeatedly contentious issue of CAS and fixed-wing mobility support in Southeast Asia. Their collaboration, outside the context of the Joint Chiefs of Staff, developed a revised TACS for Vietnam and led to an amicable transfer of CV-2 and CV-7 from the Army to the Air Force.

[1340] Gersten interview, 22 October 2013.

[1341] Jumper interview, 16 December 2013.

[1342] Colonel Matthew Neuenswander, then the Commander, recounted that, "I was unimpressed with the CAS ability of the [F-15E} Strike Eagle [aircrew] when I got over there [to Afghanistan] and actually taught the class to many guys to increase their proficiency." The F-15E community also benefited by having several former A-10 pilots with substantial CAS experience who could provide instruction on tactics, techniques, and procedures to their deployed units attempting to learn a new mission while it was in progress. Neuenswander interview, 7 January 2014.

McConnell surrendered ground on rotary-wing aircraft for battlefield air mobility in return for the Army's concessions. In Futrell's account, it appears that the 6 April 1966 McConnell-Johnson agreement did not put all contention to rest, as the Army's development of the *Cheyenne* helicopter continued to rankle McConnell and other Air Force generals as Army overreach beyond battlefield mobility and firepower into the realm of CAS.[1343] In this case, issues of immediate relevance to battlefield operations required headquarters involvement for resolution.

Inter-service dialogue among headquarters staffs is in evidence throughout the decade of CAS and UAV-ISR improvement depicted here, but it does not appear to drive much joint cooperation. Instead, inter-service dialogue seems to open new areas of debate or expose impending points of friction. This does not make the undertaking less useful; awareness of problems in joint cooperation must precede solutions to them. Paradoxically, bouts of high tension or open fighting seem to precede the biggest breakthroughs in joint cooperation. They are superior to conference-room civility in forcing resolution of tough issues.[1344]

Summary service culture example: CAS and the A-10
Distrust between the Air Force and Army surfaces over CAS with alarming frequency. Concerns span the range of factors discussed above, ranging from endogenous (the platform used to conduct the mission) to the meso-organizational (joint command and control methods) to the exogenous (congressional involvement and oversight). General Wilbur Creech, discussing the A-10 in a candid post-retirement interview, gave a succinct summary of a typical Air Force view of CAS aircraft; congressional, industrial, and executive influence on procurement; and the enduring struggle over aircraft command and control with the Army:

First of all, the Air Force thought buying the A-10 was a dumb idea, but they welcomed it. The reason is because the OSD movers and shakers in Washington had narrowed the game down to the idea that the Army needed a "slow mover." The flawed reasoning said, "The slower the better," so you can find things on the ground, The worst close air support you get is from an airplane that has been shot down.

The A-10 concept was silly in many ways. One, it was deliberately a slow mover. Second, if you have ever been in combat and seen a 23-millimeter work on the side of an airplane, there hasn't been a "titanium bath tub" ever built that is going to save that A-10.

Contractors egged them on. The government will get a dumb idea and five contractors will rush forward and say it is the most brilliant stroke of genius that has come forward the last three centuries. They want to sell stuff! Business is business. The reason we in the Air Force welcomed the A-10, the game was either buying Cheyenne *helicopters for the Army or A-10s for the Air Force. And we honestly believed we could do the job better than they could for themselves. We weren't against A-10s, but we were worried where you were going to use them because they were such slow movers.*

Creech retired as the longest-serving TAC commander, so his biases are perhaps a bit more exaggerated than other senior Air Force officers, but they do line up with institutional thought and trends about CAS. He exuded the confidence-*cum*-arrogance that so seems to grate the collective Army psyche. He showed disdain for the quality of decisions derived from both meso-

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[1343] Futrell, *Ideas, Concepts, Doctrine Vol. 2*, II, 1961-1984, 518-19.

[1344] In literature addressing negotiated agreements, allowing parties to "let off steam" is a recognized pragmatic approach often taken before arriving at mutually acceptable solutions; see Roger Fisher, William Ury, and Bruce Patton, *Getting to Yes: Negotiating Agreement without Giving In* Third ed. (New York: Penguin Books, 2011), 33-35.

organizational consensus and exogenous political influence, but acknowledged the role of both. As in the current COIN conflicts, Creech's comments reflect a lack of joint consensus about proper CAS platforms, organization, or control, even though responsiveness of the TACS improved over the long conflict. Given that a similar debate about the A-10 is ongoing today, definitive and enduring inter-service consensus about CAS appears to be elusive in perpetuity.

A conclusion about culture
On balance, using service cultures as an explanation for jointness merits all the caution prescribed against it in Chapter 2. This case-study investigation shows that service cultures, inasmuch as they represent service habits or stereotypes, can often become a source of friction.[1345] An area of particular danger, one that warrants attention from senior military and civilian defense leadership, is an individual who allows parochial views to sour the joint force against working with one or more components. However, empowered with knowledge of service or subgroup biases and preferences, someone wishing to foster jointness may, with caution, manipulate a situation by exploiting culture. One promising area that presented itself in this study was the coalescence of a marginalized service subgroup (the Air Force UAV community) with other military interests outside the Air Force who desired its capabilities in the pursuit of a joint goal for better COIN ISR.

4. Defense Department and Joint Staff Structures: Does the structure of the Joint Chiefs of Staff, the Joint Staff, and specified and unified combatant commanders further or hinder joint cooperation? Do the powers of the Secretary of Defense further or hinder joint cooperation?

Joint doctrine, service doctrine, and 'lessons learned'
As described in the development of training for COIN warfare, all services made recognizable efforts to improve 'lessons-learned' organizations. These new units had impact within the services and attempted to achieve a broader, inter-service audience as well. Sources interviewed for this work applauded those efforts, but there is skepticism over whether the services give sufficient attention to joint doctrine that might conflict with service doctrine or long-established preferences. Again, Thomas Mahnken's conclusion that service loyalty runs stronger than an appeal to common function seemed to hold true. A very common criticism was that 'joint doctrine is just Army doctrine with a different cover,' causing outright rejection by members of the other services. The general spirit of that charge is probably accurate in the light of David Johnson's descriptions of the primacy of surface-component doctrine in joint doctrine, but the response it creates is deleterious. Inherent distrust of 'joint' doctrine does not bode well for its contribution to jointness.

As with service culture, the matter of joint doctrine seems to raise as many issues for concern about jointness as it does sources for optimism. Not all is bleak, though. All services rely on, and routinely participate in revising, the joint tactical publication on CAS, called by the unwieldy title *Joint Publication 3-09.3*. The existence of this publication marks an example where joint 'doctrine' (it is really a tactical pamphlet) does build consensus and advance jointness. Participants in a revision cycle ongoing at this writing confirmed the enduring

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[1345] As with most forms of prejudice, there is a chance that *post hoc, ergo propter hoc* aspects color some inter-service bias. It is worth mentioning that culture can appear to have explanatory power in fading hindsight, the raw emotion of a failed operation still influencing assessment, when other root causes likely created a breakdown in jointness.

relevance of the document.[1346] In the case of COIN air power, coordination of tactical-level procedures through the coordination of joint publications, with sufficient attention and care, can make a positive contribution to jointness.

Endogenous and meso-organizational processes to acquire 'urgent' operational needs
A second visible mechanism by which cooperation and innovation in COIN air power occurred was via the Joint Urgent Operational Need (JUON) process. JUONs allow a designated combatant commander to specify needed capabilities for his given AOR. As the only geographic combatant commander with extensive ongoing combat responsibilities, the JUON requests from the CENTCOM commander's staff have received outsized priority since 2001. JUONs offer the promise of expedient help, bypassing normally cumbersome acquisition processes and enabling 'fastest-to-need' development. The staff involvement in the JUON process allows for some creative license, though, introducing the possibility of unforeseen agency effects. A clever staff officer with knowledge of an emerging technological capability can learn how to craft a JUON chocked with specifications that guarantee a specific 'off-the-shelf' component or a demonstration-prototype technology that alone can fit the 'requirement.' Individuals have even used the process to get a particular aircraft assigned against an ongoing or anticipated mission.[1347]

Since the JUON process is subject to manipulation, it acts as a double-edged sword. No doubt the process has enabled some creative military personnel with good ideas about how to more effectively wage the COIN wars in Afghanistan and Iraq. The JUON process is also subject to abuse, particularly in CENTCOM, because of its status as the sole active warfighting command. The process also takes visibility and testing requirements that normally lie with the services and places them in the hands of the Joint Staff and DoD agencies. The 2011 'UAV surge' arose in large part because General David Petraeus authored a JUON specifying capabilities for an unmanned, armed ISR platform "that only a *Predator* or *Reaper* could do."[1348]

Once invoked and approved, JUONs can achieve an unstoppable critical mass. One interviewee described a certain ISR capability developed to meet a JUON requirement. Once the combination of technology and operational capability reached the theater, it proved undesirable to both the Air Force unit charged to operate as well as the Army units to whom it nominally provided support. In spite of these opinions, the force of JUON "compliance" meant that "CENTCOM and the CAOC made us fly three times a week, even though the asset was just taking up valuable ramp space" at a crowded Afghan air base.[1349]

JUONs constitute a *de facto* system to short-circuit the cumbersome military acquisition process and congressional oversight of military equipment procurement. In 2011, Deputy Secretary of Defense for Acquisition, Technology, and Logistics Ashton Carter requested that Congress honor a department request for a $200 million boost to JUON response funding. "JUON occurs when U.S. commanders on overseas operations request equipment, often as a result of new threat identification. Major JUON acquisitions in recent years have emphasized

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[1346] Harvey interview, 22 January 2014.
[1347] Sladek interview, 13 May 2014.
[1348] Gear interview, 18 November 2013.
[1349] Anonymous Air Force officer, personal interview with the author, November 2013.

counter-improvised explosive device (C-IED) technology, such as mine-resistant ambush-protected (MRAP) vehicles, which are replacing Humvees."[1350]

Combatant commanders can indeed use the process to promote rapid acquisition of their top priorities, but the system is open to manipulation and abuse as well. As a case in point, consider a routine article describing how "the Army" issued a JUON request for Puma tactical UAVs in 2010.[1351] The article is technically incorrect because JUONs originate by definition from a combatant commander; they exist formally only at the meso-organizational level of the defense hierarchy. Yet the article also accurately reflects a reality of the rapid acquisition process, which is that services can have outsized endogenous influence on the 'joint' process. In practice, service interests, empowered by their positions in nominally joint organizations, have influence in defining requirements that may go beyond a combatant commander's actual intent.

A 2009 Defense Department report critiqued services' lack of visibility over urgent need requests. It complained that services lack "visibility into the management process" and that urgent needs are generated by "a unit in the field, by the staff of the combatant command, or at any headquarters in between." [1352, 1353] The report recognized the problem as abuse of the term *urgent* as it is applied to service requests and of *ad hoc* processes becoming formalized to circumvent normal service acquisition and logistics systems. The report recommended curtailing the requests and establishing a formal dual-track acquisition system.[1354] For reasons discussed later in this section, Congress is unlikely to allow such erosion of its fiduciary power, and is more likely to ensure the temporary processes diminish when the country is not involved in routine combat.

Exogenous demands for short-term capability growth
JUONs are not the only source of short-term demand for military capabilities. DoD attention to an issue, especially of a negative cant, can also spur a service to action. Speculation about the Air Force 'decapitation' that saw Secretary Michael Wynne and Chief of Staff General Moseley dismissed in 2008 remains a popular topic of conversation within the Air Force. Secretary Gates' stated reasoning for the firing was the leaders' culpability for mishandling nuclear weapons in a series of embarrassing gaffes.[1355] However, many Air Force observers have speculated that it was more closely related to dissatisfaction with UAV support. Analysis of civil-military relations observations earlier in this chapter described Secretary Gates' well-documented disappointment with Air Force UAV development. Gates' true motivation for his handling of Wynne and Moseley is indiscernible and irrelevant. What mattered was the unmistakable message it sent to the Air Force about the alacrity with which it should continue to deploy UAV systems, a message followed closely by the newly appointed senior military and civilian leaders.

[1350] Jonathan Hargreaves, "Urgent Requirements Suffer Under Current U.S. DoD Procurement," *Jane's Defence Weekly*, 18 April 2011.

[1351] Caitlin H. Lee, "AUVSI 2011: US Army Orders 180 More Puma Tactical UAVs," *Jane's Defence Weekly*, 18 August 2011. https://janes-ihs-com.aufric.idm.oclc.org/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1187870&Pubabbrev=JDW.

[1352] The report also analyzed the U.S. Special Operations Command as a separate entity since it has independent acquisition authority, along with more than 20 other DoD organizations, funds, and processes "aimed at urgent or rapid acquisition."

[1353] Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics, Defense Science Board, *Report of the Defense Science Board Task Force on the Fulfillment of Urgent Operational Needs*, July 2009, 20.

[1354] Ibid.

[1355] Shanker, "2 Leaders Ousted from Air Force in Atomic Errors."

Exogenous influence, though it can spur results in the short term, may also cause defensiveness within the services. In spite of the necessity in combat and confluence of political forces converging to increase the Air Force commitment to UAV-ISR platforms, the service did push back against the external demands for capability. One of the talking points senior leaders presented to several audiences in 2011 was the need to stabilize the size of the UAV force following multiple 'surges' that had grown the total number of UAV CAPs in the CENTCOM AOR, including the shutdown of training pipelines to divert instructors to combat operations for a time. The Air Force, seeking to normalize its training programs and deployment timelines, asked for predictable plateaus of steady-state operations in return. However, James Gear related that, "Each time the Air Force met the increased requirement, they [the Office of the Secretary of Defense] returned for more."[1356]

This observation is consistent with Gates' own account of the "haranguing" he directed against the Air Force to find "more capability" for ISR.[1357] The UAV force (measured by number of aircraft) has reached five percent of the Air Force inventory, according to Air Force Chief of Staff General Mark Welsh.[1358] His advocacy does not reflect a desire to reduce the percentage of Air Force personnel now supporting UAV operations, but rather to move away from support of medium-altitude UAVs and increase the capacity of systems that can survey a "broader area," cueing other UAVs, ISR platforms (including satellites), aircraft, or surface-based weapons systems to their observations.[1359]

UAVs are perhaps an extreme example, but this study also found another area in which Defense Department interest seemed to incite service defensiveness. In 2013, the Defense Advanced Research Projects Agency (DARPA) announced that Rockwell Collins would be the lead contractor for its Persistent CAS program, a series of advanced display, visualization, targeting, and communications equipment designed for JTACs that aims to decrease CAS targeting timelines.[1360] On the surface, the program promised to keep up momentum for continued innovation in this area. Interviews with Air Force offices who have interests in similar capability, however, suggest that the normalization of these capabilities under OSD supervision may make the path for more affordable, novel, and rapid technology integration more difficult.[1361] Though it is too soon to evaluate the vector programs like this will take and if there is continued enabling of joint action through shared situational awareness, the competition between endogenous and exogenous levels of the defense hierarchy seems unlikely to advance cooperation in the long term.

Overall, meso-organizational and exogenous structures have a mixed record on promoting jointness. Joint doctrine and lessons-learned organizations sometimes sow seeds of discord rather than agreement, though positive outcomes from concentrating on tactical procedures are evident. Processes designed to circumvent normal acquisitions or other bureaucratic processes do offer joint commanders options for fixing problems in the short term. However, these processes are subject to overuse and abuse, and the jumble of systems they push to the battlefield, divorced

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[1356] Gear interview, 18 November 2013.

[1357] Gates, *Duty: Memoirs of a Secretary at War*, 131.

[1358] Lee, "USAF Debates Reduction in UAV Orbits."

[1359] Ibid.

[1360] "Rockwell Collins Technology to Enable Next-Generation JTAC Capabilities for DARPA Close Air Support Program," Industry Press Release, 30 December 2013, https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=Press+Release&ItemId=+++1585778&Pubabbrev=DIPR.

[1361] Laclede interview, 31 January 2014.

from any scheme of orderly planning, does not bode well for joint interoperability in the long term. Similarly, exogenous organizations should tread with care in exercising the unique influence they have over services, particularly using the justification of wartime urgency. While SECDEF and DoD can force short-term fixes to unique operational challenges, involvement that a service perceives as meddling may result in more recalcitrance. Questions about civilian control of the military aside, this kind of distrust seems likely to impede rather than enhance jointness.

5. Other Exogenous Factors: Do defense acquisition processes advance or hinder joint cooperation? Do exogenous organizations' perceptions and stereotypes of the services advance or hinder joint cooperation? What are the other exogenous influences on a specific instance of joint relations?

Congressional interest lies more with acquisitions, less with command and control or efficacy
At the uppermost exogenous levels of the defense establishment, different perceptions of what jointness is and how it should be pursued begin to emerge. This effect is most apparent in Congress, which has a relative dissociation from the military policy set by the executive branch. This finding does not deviate from longstanding civil-military relations theory. Huntington observed that, for Congress in general, "Its policy goal is to reduce the military budget as much as possible without challenging fundamentally the military policy embodied in the budget."[1362] He further observed that Congress' normal mode of expressing influence over defense policy "is to support an increase in the funds allocated to one particular service or program."[1363] These two tendencies may converge into a belief that common-platform acquisition across services is the pinnacle of jointness. Alternatively, if Congress becomes convinced that a given system is important to the success of an ongoing operation, it will begin to force its acquisition, sometimes ignoring service or executive branch recommendations.

These general trends are in view for the Afghan and Iraqi conflicts. Congress gave its broad assent to both endeavors. Excepting vociferous *ex post facto* criticism of the original premises for involvement in Iraq, Congress has provided few harsh reviews of the military conduct of either war. The same is not true for specific military spending programs that facilitate combat, though. CAS, a relevant area for this case-study analysis, is a representative military specialty. Records of the U.S. Congress reveal that CAS and the aircraft with which it is conducted has been a frequent topic of interest since the 1940s. All of the advances in, difficulties with, disputes about, and triumphs of CAS in combat are well represented in legislative hearings, reports, and other records. Themes observed from a review of hearings that broach the topic include:

1) *Mention* of command and control measures, but with deference to the military methods in place, including assumptions and assurances that the services would improve any existing, sub-par methods;

2) Careful attention to the airframes produced and employed for CAS;

[1362] Huntington, *The Soldier and the State*, 423.
[1363] Ibid., 424.

3) Re-visiting historic agreements about and discussions of service-assigned roles and missions;

4) Tension between viewing CAS as a service- and platform-specific endeavor and treating it as a joint competency that falls along a variable spectrum of military fires. David Isby pointed out the clash of ideas, and argued "it is more accurate and more useful to see both fixed-wing close-air-support aircraft and attack-helicopter operations as elements on a broad spectrum of firepower from all services and sources… The different elements of this spectrum do overlap, so that weakness in any one element can be compensated for by strengths in other elements."[1364]

A set of 1971 hearings by the House Armed Services Committee hearing on CAS demonstrated several dynamics that still surface over four decades later. In general, while the hearing dealt with both command and control and aircraft systems, the focus of the hearing was clearly on the discussion of three CAS aircraft then being debated for inclusion in defense budgets: the A-X (progenitor of the A-10), the *Cheyenne* attack helicopter (cancelled in 1972), and *Harrier* jump jet (for which Marine Corps delivery began in 1983 as the AV-AB *Harrier II*). Chairman of the Joint Chiefs of Staff Admiral Thomas Moorer described the CAS request system that had developed in Vietnam in some detail, concluding that it "is a very good system…it has worked fairly well."[1365] Moorer mentioned the overlapping roles that the three aircraft might play in combat based on weather, target selection, troop proximity, and level of air defense. Those remarks inspired Senator Howard Cannon to broach the topic of roles and missions, noting several agreements that gave the Air Force responsibility to provide "close combat air support of ground forces."[1366]

The dynamics of interest-group coalition building discussed earlier also help explain congressional interest and outcomes. Exogenous political forces, including lobbying by defense manufacturers with equipment to sell or military operators who want to see a weapons system survive budget cuts, coalesce with endogenous advocacy. Outside influences can reinforce the doctrinal preferences of a vocal advocacy group within one service, perhaps in opposition to the strategic preference of that service. This dynamic has applied to CAS ever since the Air Force gained its independence as a service. It appears in hearings about CAS consistently since 1948, and continues to emerge in today's debates about retiring the A-10 or relinquishing the aircraft to the Army's control.

The Air Force consistently appears in congressional documents as being against development of aircraft that can only perform CAS. Senator Carl Levin's remark that some "defense critics charge that the Air Force does not really care about the close air support mission" does not attribute the charge to a particular person, but its prominence in his opening statement gives it weight nonetheless.[1367] Andrew Krepinevich interpreted that the Howze Board, in particular its advocacy for the Army to assume CAS responsibilities, was not motivated to gain

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[1364] David Isby, from a written statement in *Roles and Missions of Close Air Support: Hearing before the Investigations Subcommittee*, 9.
[1365] *Hearing before the Special Subcommittee on Close Air Support*.
[1366] Ibid.
[1367] U.S. Senate, Committee on Armed Services, *Department of Defense Authorization for Appropriations for Fiscal Year 1989*, 100th Congress, 2nd session, 21 March; 13, 14 April 1988, 2.

the responsibility for that mission *per se* but rather to spur the Air Force on to better support.[1368] Here, the dynamics of congressional interest combine with the guilt dynamics of small-group public-goods theory to drive jointness in the face of a service's preference against a particular mission.

Only in extreme circumstances have services sought congressional involvement in their philosophical disputes. When inter-service dialogue turned into pitched conflict, it usually became a matter of congressional interest, taking turns that the services would not have anticipated, and leading to investigations that were uncomfortable or embarrassing. In the late 1940s, the Air Force and Navy battled over sharing the nuclear mission and whether the Navy would be authorized to hit certain inland targets with its strike aviation capability. Fearing reduction to the point of "military impotence," the Navy pressed for enshrining service roles and missions in legislation rather than leaving them to the whim of executive order.[1369]

When unification became the law of the land, the Navy maneuvered for position to be a critical part of the nuclear strike force. It opposed Air Force efforts to consolidate national strategic strike capabilities, including nuclear delivery, under its exclusive purview. The Washington battle reached full public view in the "Revolt of the Admirals" affair. During House Armed Services Committee hearings related to B-36 procurement, it became apparent that Navy officials had obfuscated and fabricated evidence to get in the way of an Air Force strategic bombing initiative they opposed. Jeffrey Barlow concluded that while these officials were discredited by their misconduct, the whole matter led to congressional exploration into "issues of national military strategy, the morality of targeting enemy cities for atomic attacks, and the role of the Navy and naval aviation in the atomic era."[1370]

Open revolts do not happen often, though, and more clandestine lobbying by services is the norm. If inter-service disputes do not air openly in the context of hearings, they may appear in defense spending bills. An example relevant to COIN air power is the 2011 Senate Armed Services Committee mark-up that mandated an "orderly transfer" of the MC-12 fleet from the Air Force to the Army.[1371] While the recommendation did not come to fruition at that time, it likely spurred the Air Force to plan to send some of the fleet to its reserve component rather than retiring the airframes.[1372] The conference committee version of the 2014 National Defense Authorization Act further complicated the MC-12 picture, authorizing the transfer of the aircraft to the Army, but effectively allowing the Air Force to keep all that it 'requires.' Both service secretaries involved sent letters to both congressional armed services committees recommending against transfer plans.[1373] It is unlikely that the confusion will be completely resolved by current legislation, though the congressional action appears to have kept the Air Force planning to continue supporting the airframe for another year.

Since Congress' power of the purse is a constitutionally excavated channel in which the U.S. ship of state sails, the nature of its influence is unlikely to change. It will remain focused on

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[1368] Andrew F. Krepinevich, *The Army and Vietnam* 1988 paperback ed. (Baltimore: The Johns Hopkins University Press, 1986), 114-15.

[1369] Trest, *Air Force Roles and Missions: A History*, 116.

[1370] Barlow, *Revolt of the Admirals*, 294.

[1371] Scott Fontaine, "U.S. Senate Committee: Transfer MC-12s to Army," *Defense News*, 17 June 2011. http://www.defensenews.com/article/20110617/DEFSECT01/106170302/U-S-Senate-Committee-Transfer-MC-12s-to-Army.

[1372] Jeff Schogol, "MC-12 Liberty Planes Eyed for Cuts," *Defense News*, 5 June 2012.

[1373] Ben van der Meer, "Military Opposes MC-12 Transfer," *Appeal-Democrat*, 1 November 2013. http://m.appeal-democrat.com/military-opposes-mc--transfer/article_72fdfc14-a89f-5c69-be93-bdfc7d712e76.html?mode=jqm.

budgeting and acquisitions and more *laissez-faire* when it comes to military efficacy, making it unlikely that members will interfere in command-and-control relationships and very likely that it will continue to influence procurement programs, especially for military hardware. The U.S. almost always purchases both major and minor military material from the domestic industrial base, so individual members of Congress will represent constituencies with vested interests in favor of specific programs alongside the broader charge to provide for the common defense.[1374] It is not surprising, therefore, that all congressional CAS hearings and reports refer to the matter of command and control, but give deference to (or call for 'improvement' of) the military system in place before moving on to more pragmatic questions of hardware like radios, aircraft, and munitions. In deferring to the military's stewardship of its own organization, an objective style of control advocated by Huntington, Congress is left with only the blunt cudgel of appropriations.

The influence of Congress on military acquisition is pervasive and unpredictable, given the number of alliances that can form, break apart, and reappear. Ehrhard recorded how congressional intervention saved one of the Army's ill-fated UAVs, *Aquila*, before further development experiences disabused its overseers of the notion that UAVs could offer sophisticated military capability at low cost.[1375]

Congressional involvement in UAV programs, along with evidence of how Congress helps advance industrial interests, appeared in this case-study analysis as well. An Army expert on UAV acquisition summarized the peacetime-wartime dichotomy of congressional control like this: "It's not more bureaucracy; it's the old bureaucracy… When OCO [overseas contingency operations] funding goes away, if you're not a program of record, there's nothing to sustain it."[1376] The urgency of war relieves a bit of bureaucratic and financial constraint. In peacetime, Congress, assisted by a bevy of competing local and industrial interests, decides which programs merit sustainment.

Congressional interests coalesce with those of industrial and other domestic interests, irrespective of service preference or strategies
There is little dispute that legislative action drove increased UAV inventories during the Afghan and Iraqi conflicts, and that the mechanisms to do so were congressional budget inserts. An industry insider said that "the Blue brothers and General Atomics did an amazing job getting congressional earmarks" to force the Air Force to buy MQ-9 *Reapers*.[1377] Indeed, the use of budgetary authority over acquisitions projects seems to be the only influence Congress exerts on the military with any frequency.

General Creech's comments about the A-10, recounted in the description of CAS in the Vietnam War, demonstrate his perspective of how the military-industrial complex leverages congressional interest to influence weapons production, sometimes demanding more production than the service charged with integrating the system really needs. The trend continues, with recent congressional budget reports emphasizing more money for UAV procurement than the Air

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[1374] In fact, Congress has legislated a requirement to do so in almost all circumstances, to an extent that otherwise uncompetitive industries can stay profitable by manufacturing for the defense sector; see Lexington, "Boots on the Ground," 31.

[1375] Ehrhard, "Unmanned Aerial Vehicles in the U.S. Armed Services," 297n.

[1376] Lieutenant Colonel Stuart Hatfield, U.S. Army Capabilities Integration Center, quoted in Sydney J. Freedberg, Jr., "Less Money, More Bureaucracy: Military Robotics after Afghanistan," *Breaking Defense*, 8 August 2012. http://breakingdefense.com/2012/08/less-money-more-bureaucracy-military-robotics-after-afghanista/.

[1377] Gear interview, 18 November 2013. Linden and James Blue are co-chairmen of General Atomics, the maker of both *Predator* and *Reaper*.

Force has requested. Recent defense spending legislation specifically forbade retirement of either the A-10 or the RQ-4 *Global Hawk* (a high-altitude strategic reconnaissance UAV).[1378] Rhetoric about the aircraft and the Air Force's commitment to both CAS and UAV-ISR shows that its hard-earned 'devious' moniker retains traction with Congress; the latter is willing to exert its influence to overcome anticipated dissembling about combat requirements.[1379]

The nature of service-chief politics and meso-organizational military structure helps explain why Congress is not more heavy-handed when it comes to command-and-control issues. Observers have noted a *de facto* policy of service-chief unanimity.[1380] Part of the impetus for this clearly stems from the desire to maintain a degree of internal control of the services. Samuel Huntington traced the military's distaste for congressional involvement in its affairs back to the end of the Civil War.[1381] General Omar Bradley, when he was Chairman of the Joint Chiefs of Staff, affirmed the sentiment in a letter to then-General Eisenhower: "We just cannot have everything stirred up on the Hill every three months."[1382] These visceral sentiments, no doubt shared by other service chiefs and Chairmen, along with disincentives for open dispute written into public law, all serve to feed the unwritten policy of unanimity and compromise within the Joint Chiefs of Staff.[1383, 1384] When congressional intervention in this equilibrium does happen, it is sporadic, but thorough, taking the form of major defense restructuring efforts such as the Goldwater-Nichols Act.

Another external driver for additional Air Force UAV capability came in the form of congressional political pressure to create missions for the Air National Guard. Units with aircraft that had been or were in the process of being retired, especially the F-16, pushed to take responsibility for these UAV missions. Gear cited the examples of North Dakota's 119th Wing and New York's 174th Attack Wing, two Air National Guard units who "jumped on" the opportunity to replace retiring weapons systems with the emergent *Predator* and *Reaper* systems,

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[1378] See HASC and SASC Conference Committee, *Fiscal Year 2014 National Defense Authorization Act (conference committee version)*, 113th Congress, 1st session, 2013, sec. 143; Tara Andringa and Donelle Harder, "Chairman and Ranking Member of Senate Committee on Armed Services Reach Agreement with House Counterparts Regarding the National Defense Authorization Act for Fiscal Year 2014," 9 December 2013. See also HASC and SASC Conference Committee, *National Defense Authorization Act of 2014 Joint Explanatory Statement*, 113th Congress, 1st session, 2013, 7-8.

[1379] Senator Kelly Ayotte has led an effort to prevent retirement of the A-10, and advocates have accused the Air Force of using budgetary constraints as an excuse to divest from a mission it does not value to provide for acquisition of more F-35 aircraft; Dion Nissenbaum, "Admirers Join Forces to Save 'Warthog' Jet," *The Wall Street Journal*, 14 January 2014. http://online.wsj.com/news/articles/SB10001424052702304887104579302180502232524.

[1380] See, e.g., Sapolsky, Gholz, and Talmadge, *U.S. Defense Politics*, 7. In describing "management jointness," the authors write that it "can subtly enable informal agreements among service leaders, stifle innovating thinking, and allow proposals based on the 'lowest common denominator' recommendation to reach the president's desk."

[1381] "The new American professional officer had an inbred respect for the integrity of the chain of command stretching from the President as Commander in Chief to the lowest enlisted man. No place existed in this picture for Congress… Military officers at times wished for some mechanism to represent the military viewpoint as a whole before Congress, but they were strong in their condemnation of individual officers who succumbed to the temptation to resort to legislative influence and push special bills. They were equally vehement in denouncing Congress for intruding into the military realm;" Huntington, *The Soldier and the State*, 259.

[1382] Omar N. Bradley (General, U.S. Army; Chairman of the Joint Chiefs of Staff), letter to Eisenhower, 28 October 1949.

[1383] A 1958 defense reorganization requires the Chairman to inform the secretary of defense and president if there is a disagreement among the Joint Chiefs of Staff; *Department of Defense Reorganization Act of 1958*, Pub. L.No. 85-599, 85th Congess, 2nd session (6 August 1958).

[1384] See, e.g., Jones, "Why the Joint Chiefs of Staff Must Change."; Donnithorne, "Principled Agents," 291.

respectively.[1385] He said that air guard transitions like these "acted as the pressure-relief valve" for the Air Force quest to grow a large UAV capability quickly, providing a ready-made pool of trained aviators who could more quickly adapt to UAV missions than trainees who were new to the military.[1386]

Presidential influence on UAV expansion
Constituting the highest level of exogenous influence on jointness, a mention of presidential impact is in order here. A cursory review of UAV development since 2001 reveals that emergent executive preference at the highest level of U.S. government likely contributed to the increased UAV capability observed in the CENTCOM AOR. UAV kinetic employment increased around the world dramatically under President Obama, with the most dramatic increase in Pakistan, where strikes between 2009 and 2013 totaled 330, compared to 51 during President George W. Bush's administration.[1387] (Bush's use of UAV strikes against non-state enemies itself marks an abrupt increase, since no previous president had the option to use these weapons.)

Since executive preference for striking at dozens of individuals, designated worldwide as enemy combatants, dovetailed with a capability being used to support ground commanders in Afghanistan and Iraq, it is unsurprising that the capability expanded rapidly. The alacrity with which Secretary Gates pursued UAV capability—including his push for Air Force leadership to field systems with more haste than institutional comfort allowed—likely reflects a desire to expand the options available to the President.

The President, in the role of commander-in-chief, has more direct authority to influence command relationships in the military. Ironically, the last President with the public credibility to do so was Eisenhower, but he was noted for his hands-off attitude toward the military and desire to minimize conflict. Because of the Eisenhower precedent, presidential involvement in military affairs has come to involve more direct participation in targeting and other tactical decisions and less influence regarding the placement, direction, discipline, and culling of generals and admirals.[1388]

Definitive conclusions about the effect of military acquisitions on jointness are elusive. Again, the importance of coalition-building and bureaucratic political behavior in getting any program funded comes into view, but it is difficult to make prescriptions about how to improve jointness through the process. Because congressional interest in defense programs is more sporadic than the military's, one analysis suggests that Congress' discontinuity and the unpredictability of lobbying outcomes would work against jointness, upsetting any endogenous and meso-organizational plans the services create to acquire interoperable equipment for combat. On the other hand, one could easily point to evidence that services too readily follow their own

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[1385] Gear interview, 18 November 2013.

[1386] Ibid.

[1387] Data are from "Get the Data: Drone Wars," The Bureau of Investigative Journalism, accessed 22 January 2014, http://www.thebureauinvestigates.com/category/projects/drones/drones-graphs/. The C.I.A. generally has oversight of UAV strikes that occur in Pakistan, though congressional maneuvers attempted to push more responsibility toward the military; see Eric Schmitt, "Congress Restricts Drones Program Shift," *The New York Times*, 17 January 2014. http://www.nytimes.com/2014/01/17/us/politics/congress-restricts-drones-program-shift.html. The comparison of administration totals illustrates presidential willingness to authorize use of UAVs in general, irrespective of the implications of using lethal force.

[1388] Cohen argued that Lincoln did not hesitate to change the command structures in the Army throughout the Civil War by hiring and firing generals; Cohen, *Supreme Command*, 209-10. Cohen subsequently held that Huntington's "objective control" is applied too far and that deference to the military on "military matters" should be reconsidered in the light of the political aims of war, even to the point of replacing military leaders mid-conflict; ibid., 215.

preferences, neglecting purchases of the equipment upon which their sister services rely, and necessitating the exogenous involvement of Congress. Unsurprisingly, both views appeared in the debate about CAS platforms the Air Force used to support the Army in COIN warfare.

National strategy and joint efficacy
It is impossible to make a useful assessment of the joint contribution the Army and Air Force made to national security in the Afghan and Iraqi COIN efforts without reference to the larger context of those wars in the scope of U.S. strategy—the utility of both interventions will remain contested for many years.[1389] Therefore, the scope of this study considered only the context of the services' response in relation to exogenous national security directives, which varied over the length of the conflicts. The resources and direction provided at the outset of OEF and OIF suggested to the services that they should prepare for fast wars of liberation, relying on smaller ground-force deployments and more heavily on air power. Later, as the difficulty of attaining stability in both countries became apparent, a relatively slow shift toward an indirect COIN strategy emerged, resulting in increased ground-force commitments to Iraq and then Afghanistan. As described earlier, uncertainty about and mixed signals regarding the preferred national strategy for Afghanistan and Iraq may have exacerbated inter-service friction and detracted from jointness.

IV. Conclusion

The case-study analysis of Chapter 5 proved more difficult than the first two for several reasons. It is an ongoing conflict, and most of the pertinent records remain under the seal of military-classified information, off limits to this investigation. Some of the key ideas that inform the analysis—namely the patchy U.S. record of integrating air support to ground units and the broader issue of COIN warfare and the military's operational preferences—are by no means settled historical debates and often elicit defensive responses when broached. Selecting ten theoretical lenses, as truncated as some necessarily are for the sake of brevity, provides a dizzying array of perspectives from which to observe the phenomenon of jointness. To keep Chapter 5 from dominating the overall work, this appendix served to provide more evidence for some of the brief assertions touched on in its main text.

Happily, the lessons of many of these condense into consistent observations throughout the case-study analyses and the works of others about the topic. This appendix has provided a view of some of the thinking that informs the 'parameters of jointness' discussed in Chapter 6 and many of the preliminary conclusions that populate Chapter 7.

[1389] Though both OEF and OIF receive frequent scrutiny, OIF has had relatively more second-guessing and outright vitriol heaped upon it as a national policy objective. Anthony Cordesman's testimony before the Senate Foreign Relations Committee grips up most of the main points of criticism of U.S. policy toward Iraq during the 2000s as well as venting frustration about the difficulty of prevailing in successful nation building while engaged in asymmetric warfare: "The option of quickly turning Iraq into a successful, free market democracy was never practical, and was absurd a neoconservative fantasy as the idea that success in this objective would magically make Iraq an example that would transform the Middle East;" U.S. Senate, Committee on Foreign Relations, *Iraq: The Way Ahead*, 108th Congress, 2nd session, 19 May 2004. In contrast, when announcing a troop surge in 2009, President Barack Obama said, "I am convinced that our security is at stake in Afghanistan and Pakistan… This is no idle danger; no hypothetical threat;" Barack H. Obama, "Obama's Address on the War in Afghanistan," *The New York Times*, 1 December 2009. http://www.nytimes.com/2009/12/02/world/asia/02prexy.text.html?pagewanted=all&_r=0.

APPENDIX B

SURVEY OF DEFENSE PROFESSIONALS

I. Introduction & Background

Early on in the process of interviewing the dozens of defense professionals who contributed to this work, it became apparent that 'jointness' had a scattershot definition and usage, even within the community charged with its execution. Few made reference to the official definition of the term 'joint' from Joint Publication 1-02: "Connotes activities, operations, organizations, etc., in which elements of two or more Military Departments participate," and there is no official definition for 'jointness' listed in the Joint Staff's publications.[1390] Noting the answers given to questions about the essence of, level of, and motivation for jointness allowed classification into groups of a few general replies. These general responses became a set of three multiple-choice questions and were sent in survey form via e-mail to all who participated in interviews during the duration of this research.[1391]

II. Survey Questions

The questions submitted to those surveyed appear below. A personalized introductory paragraph preceded the opening shown below, serving to thank subjects for their earlier participation and to assure maximum response rate.

As I finish the dissertation based on this research, I have been able to group the views all interviewees have shared about jointness, and I am cataloguing them according to general themes for future study. To help with this effort, I wondered if you would consider answering the following brief, three-question survey. It consists of multiple-choice questions, so single-letter answers are appropriate. If you would care to provide comments—such as "all of the above," "none of the above," and why you think that to be the case—anything you have time to write is valuable to my effort.

QUESTION 1:
'Jointness' in the U.S. military SHOULD consist primarily of (choose one)
> *A) inter-operability of equipment on the battlefield (compatible radios, computers, situational-awareness systems, e.g.)*
> *B) unified command and control under a properly appointed joint commander,*
> >   *OR*
> *C) efficiency in acquisition and logistics by increased economy of scale?*
> *Comment:*

QUESTION 2:
Given your answer to QUESTION 1, how do you characterize the level of jointness in the U.S. military:
> *A) near-optimal,*
> *B) too little (or almost non-existent),*
> >   *OR*
> *C) too much?*
> *Comment:*

[1390] *JP 1-02 (2014)*, 139.
[1391] Birch, "Joint Cooperation Survey."

QUESTION 3:
Who or what should be the primary influencer, driver, or reason for jointness?
> *A) a compelling, shared strategic vision that motivates services to pursue a common goal;*
> *B) external direction from the President, Congress, the Department of Defense, or another entity that oversees the defense establishment;*
> > *OR*
> *C) the need for greater fiscal or combat efficiency due to constrained resources?*
> *Comment:*
Thank you (again) for your consideration and help!

III. Results

The overall response rate was sixty-nine percent (thirty-eight of fifty-five interviewees responded), with all respondents answering all three questions. Results for each question and sample textual replies follow.

Question 1: The Essence of Jointness
Although this question was posed to force a single answer, almost as large a percentage of respondents who indicated "unified command and control" refused to be constrained by the question and selected multiple answers. Of the multi-faceted answers, about two-thirds chose "interoperability" as an inseparable piece of the puzzle, with the remaining third choosing all three of the listed options.
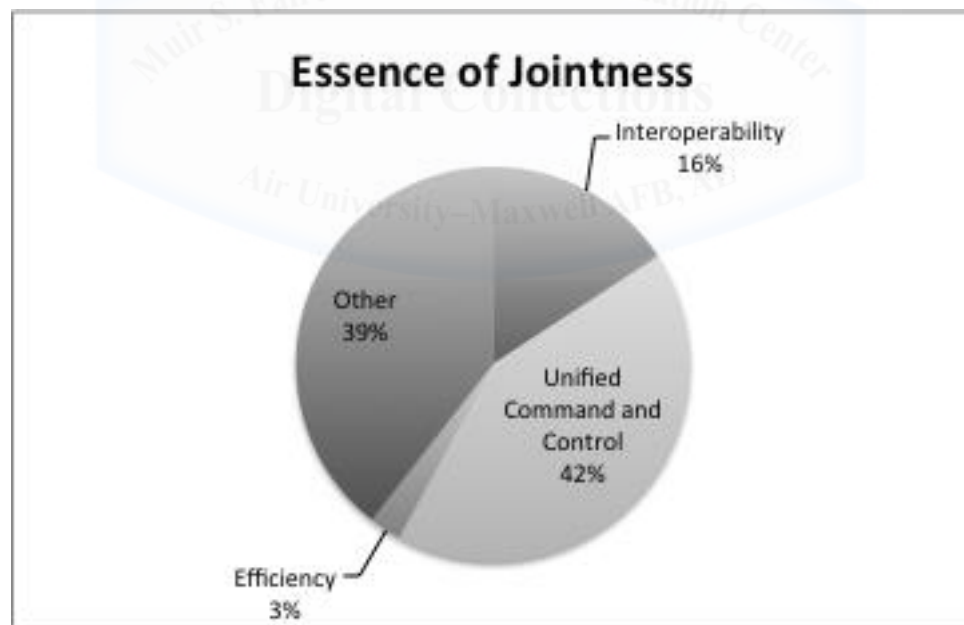
Figure B.1 Responses about the essence of jointness

Representative Sample Responses
"B. While I believe very strongly that the services should strive to have inter-operable systems, I believe the overarching principle of 'jointness' is the proper execution of command and control of all assigned services/forces under a properly appointed joint commander."

"All of the above in appropriate measure and with emphasis on A & B. What would really drive jointness is the development of Joint Concepts of Operation that would analyze how we plan to engage jointly

before we run out and start buying the equipment we will use to fight with. A true CONOPS would guide interoperability, C2 and acquisition. The JROC should be reformed to produce CONOPS instead of requirements."

"It is all of the above. We achieved interoperable levels of 'Jointness' in Gulf War I. We need to press Jointness to the next level of 'Interdependence." In today's world of scarce resources and rapidly expanding capabilities, we can no longer afford to have significant single-service redundancies…"

"…should be the application of all available forces and methods to a given set of objectives. That necessarily requires a Joint Commander (B) able to command and control all tasked forces using a single set of instructions and hardware (A), which itself would need to be acquired in anticipation of such a need (C)."

"B. That is an ideal answer, the reality is that this one alone will not 'drive' the other two, so they must be pursued also. That said, jointness is the bringing together of each services contributions to create an effective, integrated, and synergistic joint force."

"I wish I could have selected two answers, and I was really close to selecting A, but I think in the end, unity of command and single purpose outweighs the interoperability. I my experiences, services tend to fight alongside each other, not really integrated with each other more often than not. So, while having interoperable hardware is a worthy goal, it doesn't outweigh the need to have one boss directing the fight and all the services pulling in the same direction."

"B. I think C is also important but have concerns about all our eggs in one basket. JSF is too big a program and no one can cancel it despite huge cost overruns. I think the T-6 program worked well as joint acquisition."

"I think all of the above might be 'situationally' useful. I guess 'situationally' applies most to answer B. A and C should always be appropriate."

"A. Includes the ability to speak a similar language (i.e., USN and USAF pointy-nose pilots still speak of target aspect 180-degrees out from each other for no apparent reason...). We have historically proven we are unable to predict the 'next big conflict.' Instead, we can focus on interoperability at the tactical level to broaden options and find/fix problem areas."

"Answer is A plus the following: I believe jointness is the ability of each service to bring their expertise and capabilities to the fight in a way that is synergistic. Each service needs to do their piece, under a joint force commander, in a way that shares information, adds to the situational awareness of all, and contributes to synergistic effects."

"I chose B because in my experience the lack of an integrated battle rhythm (especially integrated planning and integrated assessment) is the BIGGEST shortfall to joint operations."

"A. I interpret 'primarily' as 'what is the highest priority of these three.' Equipment and technology are an undeniable reality for warfighting. Even efforts like the Army's RAF program to enhance regional awareness and cultural interactions will still require command and control systems, communication systems, and cyber. I believe the degree of interoperability at the tactical level affects the capacity for strategic performance at the command and senior leader level because problems of interoperability at lower echelons get pushed up the chain, distracting commanders from more valuable use of their time."

Question 2: Levels of Jointness
Responses to this question broke down exclusively between "optimal" and "too little." The third of respondents who cited optimal levels of joint cooperation almost invariably pointed out that after more than a decade of fighting together in Iraq and Afghanistan that levels of jointness had never been higher. Most who commented in this vein also anticipated that the level of cooperation would drop to a suboptimal level after the ongoing conflict stopped.
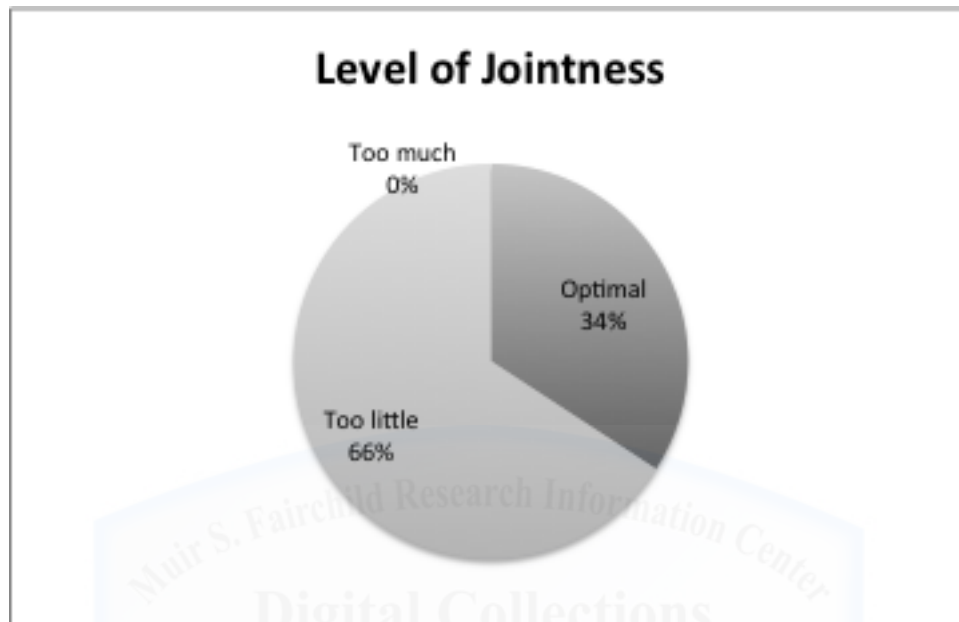
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Figure B.2 Responses about the levels of jointness

Representative Sample Replies
"Optimal for yesterday's fight…suboptimal and potentially crippling for the future."

"Despite 13 years of major combat operations, you still can't get BFT [Blue-Force Tracker] or a RAP to anyone that needs it. Poor."

"Too little. I answer this way not because we don't do a good job establishing joint commanders and assigning/attaching forces to them, but that we fail to accomplish the 'Organize, Train, Equip' required to be interoperable to the extent that we need to be. Further, I think that at the individual level there are service members in joint command positions that utilize their authority in a service-parochial fashion, usually favoring their parent service, rather than acting as true joint officers. This is a critique on the system that was created out of Goldwater-Nichols that supposedly creates Joint Service Officers that are above such nonsense."

"A. When I look at how far we've progressed from the Vietnam War to today, I believe we've made vast improvements in the area of joint commanders and component commanders. Some Airmen have vigorously argued that the recent JTFs in Iraq and Afghanistan were way too 'ground-centric' and the fact that there were few Airmen in key positions on those staffs showed that they were not truly JOINT Task Forces. While I agree there could have been more Airmen on those staffs, and I was a strong supporter of the AETF-I/A changes made by Generals Hostage and Goldfein, I disagree that to be a true JTF there needs to be equal representation from the services."

"I would say that it seems to be about the right place for what we do…I don't think there is too much duplication nor are there too many gaps left untreated by the services. There seems to be a real awareness of the roles and missions of each service, and they reach out to the other services when they approach those seams and gaps."

"A. We could do more. The CSO training in Pensacola was once joint and now separate though we do nearly the same thing with the exact same plane. There is a lot of dual infrastructure now in Pensacola with two separate training programs. The joint pilot training that we did at Vance and Whiting Field had merit, but there was no cost savings. Thus, it was terminated."

"Better than it has been in the past but short of what we need. For example, we should be able to take an inherently joint task like global mobility and analyze and create a CONOPS that describes the right combination of airlift, rapid sealift and normal sealift to respond to the scope and scale of contingencies we envision, everything else being a lesser included case. From that we should derive the requirements and an acquisition plan."

"A. It's adequate (certainly way better than it was), but there is still plenty of room for improvement."

"The level of jointness right now is the highest it has ever been, but there is still lots of room for improvement. One of my primary concerns is that we will lose what we have gained from OIF and OEF after we draw down in Afghanistan. It will be a huge challenge to work the training and exercises in order to maintain what we have now."

"B. The consistent experience is that the commander is usually well-informed and making decent battlefield decisions, but that awareness is not shared because the supported components are not integrated into the planning and assessment phases. The result is good plans, befuddled by well intentioned but misguided tacticians/tactical decision-makers."

"A. Fairly good at operational command level. Not bad at equipment interoperability since Goldwater-Nichols after 30 years of working the problem: radios and data transfer systems largely work together. C-grade in the joint acquisition of equipment because so much of it is beyond the services' control. Some very successful examples: JPATS and JSF, notably. Some failures for widely varying reasons. But political pressures and contractors power often overmatch the Services' abilities to do joint programs."

"B. We have interoperability problems within the USAF that hamper service specific operations. I'm sure the same exists within the other services. The USAF is by far the most Joint of the services, having specific weapon systems to service other services and thousands of liaison elements aligned with the other services. But our systems don't talk, and it's an extremely rare occasion that a Joint leader truly 'understands' what each service brings to the fight."

"A. One could argue (A) as determined by (B) as influenced by (C). A compelling strategic vision would result in Jointness, naturally – all striving to achieve the same vision would drive productive cooperation toward interoperability, logistics efficiencies and would probably produce better and more, qualified Joint leaders. All influenced by budgets."

"B. If you're talking about the existing jointness that influences military activities at the tactical level, then the DoD needs more. If our tactical systems are not 99% interoperable and our warfighters don't, with some fluency, speak and understand their sister Services, we need more. At the strategic level, I'd say 'too little' because we're still stovepiped and refuse to have a serious roles and missions discussion for fear of losing TOA (back to inertia)."

Question 3: Ideal Drivers of Jointness

Most respondents chose a single response to this question, with just over two thirds settling on the idea of a unifying vision, often described as a "Concept of Operations" or "CONOPS" behind which the services would get in line to provide their best possible capability to national defense. A trend noted in these responses was that the more senior a military leader was, the more adamant he or she tended to be in indicating that one or more joint concepts of operations was the *sine qua non* of achieving joint cooperation.
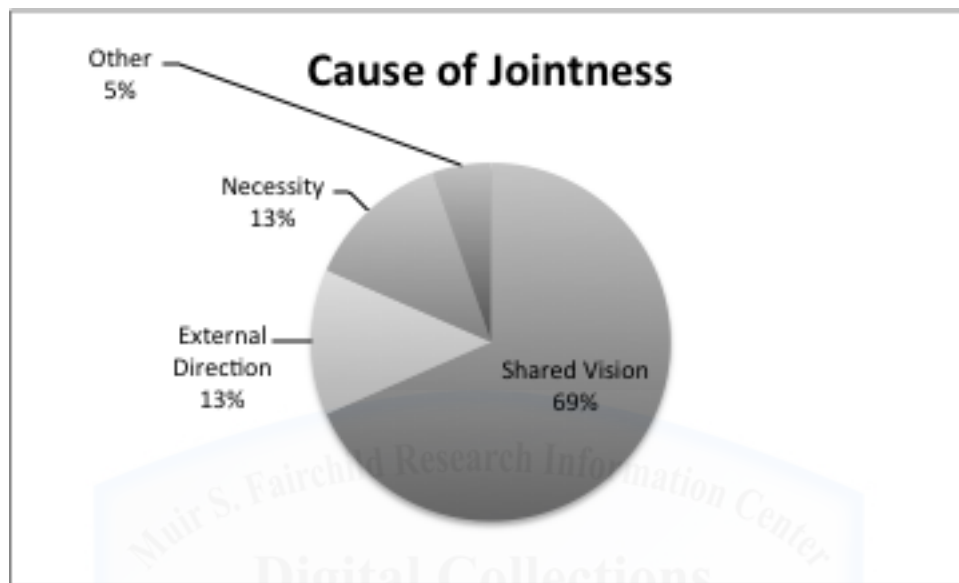
Figure B.3 Responses about the ideal cause of jointness

Representative Sample Replies

"A, but I would change your wording slightly to say 'services/components.'"

"A. Shared vision. This is the ideal answer...and one that I think we are capable of achieving when there is some type of existential threat that helps to align us. However, in a budget constrained environment in which the greatest threat is your service share of DoD TOA [total obligation authority], we need B) external direction from the President, Congress, the Department of Defense, or another entity that oversees the defense establishment...I think that right now the services are incapable of thinking about anything other than survival, which pits them against each other."

"B. Just like the CCDR forces the fielded services in the theater to a common goal and vision, the services, while engaged in the 'organize, train & equip' role, need an external forcing function. That needs to come from OSD, the President AND Congress. They each have unique roles and abilities to force the services to move closer together and embrace the jointness that makes the DoD a better, more lethal fighting force."

"We the leaders of DoD need to be the thought leaders and visionaries of Future Jointness. It is desired to be taught at the lowest levels of PME, both in uniformed and civil service organizations. Achieving Jointness is a cultural endeavor…it is not a weapons system, online course, or a six-month school."

"I'd love the answer to be A, which means that the operators understand the 'big picture'. However, 'jointery' is not taught to anyone below (Lt) Col level, by which time they are steeped in hierarchical stove-piping and have just met the budget man who says 'buy this many F-35s or the Navy gets a new

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boat'. If same said bean-counter said 'you 3 get in my office and let's cut a deal' (C, above), then we'd get the same effect, but his motivation is cost savings not efficiencies, and therefore playing off the services suits that goal."

"C. A won't happen because of culture and parochialism. B is never efficient. Programs are created to check the block."

"A and C. The move to jointness should always come from within, driven by military leadership focused on the needs of National Security within the constraints of budgetary limitations."

"Trying to arrive at a shared strategic vision is simply not possible (different than responding to an assigned military or national strategy). External direction to be "Joint" is equally vague. We have that now through the JROC, which is trying to manage details that should be assigned to the services to carry out. Constraining resources means that, by definition, you are disconnecting Jointness from strategic necessity. Squeeze the resources and the first thing to go will be jointness. The glue that we don't have, and really need, is the Joint CONOPS that forces the services, along with each COCOM, to develop a plan for how they plan to fight, or carry out the strategic direction."

"A. Hopefully the shared strategic vision is to make the best possible use of the nation's resources. Which means eliminating duplicate functions (rice bowls), and trusting/sharing the other services to provide timely/accurate info about their piece of the puzzle. The DoD should not have to be 'told' to become more joint or do so only because the money is getting tight but should instinctively want this on its own."

"A. I think A will only come from B and it will have to involve some sort of services integration into a Joint force with all the façade issues that play so well to our natural human ethnocentricity (e.g., look the same...a common set of uniforms, talk the same...common vocab, share experiences...joint schools and academies vice services' schools and academies)."

"A. Shared commitment to working very closely together to win a battle, a campaign, and a war, making the best use of our advantages to minimize our casualties and achieve victory as quickly as possible."

"A. I believe the Services play a zero sum game within DoD. It's like the U.S. approach to international relations...the benign giant thinks liberal internationalism is a wonderful idea, but don't get in the way of what we think is important. Under the current formal and informal organizational structure, constraining resources reduces preferences for jointness. Certainly there are stakeholders who see opportunities to achieve efficiencies, but even in these instances, I believe ensuring perceived Service needs and 'fair cut of the pot' are a necessary (undeniable) consideration when attempting to advance jointness. Civilian leadership of the military is a balancing structure by design to keep military power under control and to implement it as an instrument/extension of policy. I think that relationship, at best, remains contentious. Therefore, the President, Congress, DoD or another outside entity may direct/drive military jointness, but the underlying contention means the real buy-in from the military won't come from being told to do it. The military has to want to do it...and see value from achieving it at some level that provides tangible benefits that outweigh other factors."

"A. Again, this relates to unified action. We have achieved the level of jointness in large part due to external direction from Goldwater-Nichols legislation and the direction from the HASC and the former Chairman Ike Skelton - but it is the right direction and our primary driver should be to pursue a common goal in support of national objectives."

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